

Producción científica, agosto 2020

Boletín de publicaciones de producción científica de la
Universidad Pablo de Olavide.

Nº. de Boletín: 6/2020

Biblioteca/CRAI

Servicio de Apoyo a la Investigación

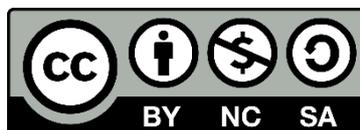
Sevilla, septiembre de 2020



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Metodología

El presente Boletín de Producción científica está destinado a la difusión mensual de la producción científica de los investigadores de la Universidad Pablo de Olavide, en Web of Science, Scopus y Dialnet.

La Biblioteca/CRAI de la UPO, como apoyo a la investigación de la comunidad universitaria del Personal Docente e Investigador, elabora este producto para la visibilidad de la Universidad con relación a su producción científica.

Los datos se obtienen de la colección de la Web of Science, de la base de datos referencial Scopus (Elsevier) y de la base de datos Dialnet.

El listado de las referencias bibliográficas junto a sus resúmenes, que suponen el resultado de la producción científica institucional mensual, ha sido elaborado a partir de la búsqueda en las diferentes bases de datos, utilizando para ello estrategias de búsqueda avanzada.

1. Web of Science

Estrategia de búsqueda avanzada:

OG=(Universidad Pablo de Olavide)

Índices=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI

Período de tiempo=Año hasta la fecha

2. Scopus

Estrategia de búsqueda avanzada:

((AF-ID ("CSIC-JA-UPO-USE - Centro Andaluz de Biología Molecular y Medicina Regenerativa CABIMER" 60012334)) OR ((AF-ID ("Universidad Pablo de Olavide" 60030114) OR AF-ID ("CSIC-JA-UPO - Centro Andaluz de Biología del Desarrollo CABD" 60103756))) AND (LIMIT-TO (PUBYEAR , 2020)

3. Dialnet

Para obtener la producción científica de se ha seguido un procedimiento para la importación de ficheros al Gestor de Referencias Bibliográficas (Zotero).

Una vez obtenidos todas las referencias de las publicaciones se ha generado la bibliografía con Zotero.

Fecha de recolección de datos: 09/09/2020



Publicaciones

ABREU-NARANJO, R., NOLASCO RAMIREZ-HUILA, W., REYES MERA, J.J., VIAFARA BANGUERA, D. y LEON-CAMACHO, M., 2020. Physico-chemical characterisation of *Capparis scabrida* seed oil and pulp, a potential source of eicosapentaenoic acid. *Food Bioscience*, vol. 36, pp. 100624. ISSN 2212-4292. DOI 10.1016/j.fbio.2020.100624.

The main nutraceutical properties were determined for *Capparis scabrida* fruit seed oil to evaluate the potential of this species as an unconventional source of plant oil. Nutritional properties were compared with commercial edible oils. The fatty acid composition was determined using gas chromatography analysis. The total phenolic content (TPC) and antioxidant activity were determined using the Folin-Ciocalteu method and using radical scavenging activity: 1,1-diphenyl-2-picrylhydrazyl (DPPH) and 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid (ABTS) assays, respectively. The statistical tools of cluster and discriminant analysis were used to classify *C. scabrida* seed oil in comparison with other seed oils. The *C. scabrida* seed has 31.5% lipid, of which 52.8% is oleic acid. Eicosapentaenoic acid, which is uncommon in the plant kingdom, was found. The omega-6 (7.87%):omega-3 (2.97%) ratio was 2.7:1, which is consistent with recent dietary guidelines. The TPC, DPPH and ABTS value were 150 mg gallic acid equivalents kg⁻¹, 1.11 and 1.94 mM Trolox kg⁻¹, respectively, for *C. scabrida* seed oil.

BACHERO-MENA, B., SANCHEZ-MORENO, M., PAREJA-BLANCO, F. y SANUDO, B., 2020. Acute and Short-Term Response to Different Loading Conditions During Resisted Sprint Training. *International Journal of Sports Physiology and Performance*, vol. 15, no. 7, pp. 997-1004. ISSN 1555-0265. DOI 10.1123/ijsp.2019-0723.

Purpose: To analyze the acute and short-term physical and metabolic responses to resisted sprint training with 5 different loading conditions (0%, 20%, 40%, 60%, and 80% body mass). Methods: Fifteen male participants performed 8 x 20-m sprints with 2-minute rests between sprints with 5 different loading conditions. Subjects performed a battery of tests (creatine kinase and lactate concentrations, countermovement jump, 20-m sprint, and isokinetic knee extension and flexion contractions) at 3 different time points (preexercise [PRE], postexercise [POST], and 24-h postexercise [POST24H]). Results: Results revealed significant increases in blood lactate for all loading conditions; however, as sled loadings increased, higher blood lactate concentrations and increments in sprint times during the training session were observed. Significant increases in creatine kinase concentration were observed from PRE to POST24H for all loading conditions. Concerning physical performance, significant decreases in countermovement jump height from PRE to POST were found for all loading conditions. In addition, significant decreases in 20-m sprint performance from PRE to POST were observed for 0% (P = .05) and 80% (P = .02). No significant differences with PRE

were observed for the physical performance variables at POST24H, except for 20% load, which induced a significant decrease in mean power during knee flexion ($P = .03$). Conclusions: These results suggest that the higher the load used during resisted sprint training, the higher the physical-performance impairments and metabolic response produced, although all loading conditions led to a complete recovery of sprint performance at POST24H.

BOSE, A.K., GESSLER, A., BOLTE, A., BOTTERO, A., BURAS, A., CAILLERET, M., CAMARERO, J.J., HAENI, M., HEREŞ, A.-M., HEVIA, A., LÉVESQUE, M., LINARES, J.C., MARTINEZ-VILALTA, J., MATÍAS, L., MENZEL, A., SÁNCHEZ-SALGUERO, R., SAURER, M., VENNETIER, M., ZICHE, D. y RIGLING, A., 2020. Growth and resilience responses of Scots pine to extreme droughts across Europe depend on predrought growth conditions. *Global Change Biology*, vol. 26, no. 8, pp. 4521-4537. DOI 10.1111/gcb.15153

Global climate change is expected to further raise the frequency and severity of extreme events, such as droughts. The effects of extreme droughts on trees are difficult to disentangle given the inherent complexity of drought events (frequency, severity, duration, and timing during the growing season). Besides, drought effects might be modulated by trees' phenotypic variability, which is, in turn, affected by long-term local selective pressures and management legacies. Here we investigated the magnitude and the temporal changes of tree-level resilience (i.e., resistance, recovery, and resilience) to extreme droughts. Moreover, we assessed the tree-, site-, and drought-related factors and their interactions driving the tree-level resilience to extreme droughts. We used a tree-ring network of the widely distributed Scots pine (*Pinus sylvestris*) along a 2,800 km latitudinal gradient from southern Spain to northern Germany. We found that the resilience to extreme drought decreased in mid-elevation and low productivity sites from 1980–1999 to 2000–2011 likely due to more frequent and severe droughts in the later period. Our study showed that the impact of drought on tree-level resilience was not dependent on its latitudinal location, but rather on the type of sites trees were growing at and on their growth performances (i.e., magnitude and variability of growth) during the predrought period. We found significant interactive effects between drought duration and tree growth prior to drought, suggesting that Scots pine trees with higher magnitude and variability of growth in the long term are more vulnerable to long and severe droughts. Moreover, our results indicate that Scots pine trees that experienced more frequent droughts over the long-term were less resistant to extreme droughts. We, therefore, conclude that the physiological resilience to extreme droughts might be constrained by their growth prior to drought, and that more frequent and longer drought periods may overstrain their potential for acclimation. © 2020 The Authors. *Global Change Biology* published by John Wiley & Sons Ltd



CARRIZOSA PRIEGO, E., OLIVARES-NADAL, A. y RAMÍREZ COBO, P., 2020. Integer constraints for enhancing interpretability in linear regression. En: journalAbbreviation: Sort: Statistics and Operations Research Transactions, *Sort: Statistics and Operations Research Transactions*, vol. 44, no. 1, pp. 69-78. ISSN 1696-2281. 10.2436/20.8080.02.95

One of the main challenges researchers face is to identify the most relevant features in a prediction model. As a consequence, many regularized methods seeking sparsity have flourished. Although sparse, their solutions may not be interpretable in the presence of spurious coefficients and correlated features. In this paper we aim to enhance interpretability in linear regression in presence of multicollinearity by: (i) forcing the sign of the estimated coefficients to be consistent with the sign of the correlations between predictors, and (ii) avoiding spurious coefficients so that only significant features are represented in the model. This will be addressed by modelling constraints and adding them to an optimization problem expressing some estimation procedure such as ordinary least squares or the lasso. The so-obtained constrained regression models will become Mixed Integer Quadratic Problems. The numerical experiments carried out on real and simulated datasets show that tightening the search space of some standard linear regression models by adding the constraints modelling (i) and/or (ii) help to improve the sparsity and interpretability of the solutions with competitive predictive quality.

CORONADO SÁNCHEZ, A., F. OJEDA-RIVERA, J. y PICO, R., 2020. *Umbrales. Paisajes de transición entre conjuntos urbanos y ruedos agrícolas en la Sierra de Huelva*. S.l.: s.n.

The region of “Sierra de Aracena”, in the north of the province of Huelva, is not a homogeneous one. Different environments, as well as historical development, have created prominent nuances and internal complexities. The orography, humidity, the presence of water, the borderperipheral nature and mine exploitation have been key factors in its architecture, population and landscapes. As a result, the patrimonial values of historic settlements in these mountains are not so much in the monumentality of its architecture, as in the relationships it forms with its immediate surroundings, where complex, ever-changing and detailed landscapes are being formed. These meeting points do not only display the different consequences of human settlement and the relationship between productive and domestic functions, but they are also a mixture of ecosystems and dynamic territories depending on socioeconomic situations and changing landscapes. The network of settlements in this westernmost part of the Andalusian “Sierra Morena”, bring about a unique quantity of small, close and well-connected centres with exceptional and highly anthropized landscapes. Much of this system is linked to the transformations during the eighteenth century, where enlightened thinking caused a population boom, which initiated the cultivation of territory through a network of cities specialized in different agricultural production around the cities. They were enclosed and small spaces with stone walls where people live by growing a variety of rainfed and irrigated crops and by farming livestock. These tend to be developed in continuity with the farmyards of the houses that are located on the town borders and in some of them a broad range of different

constructions can be found, such as canal irrigation systems -which are called lievas here- water storage structures -tanks- and mills. Just like in some mountain areas wooded areas you'll find cork oak forests, used for cork processing, and cultivated chestnut forests. These urban border spaces are vigorous but highly fragile landscapes, both because of their great visual accessibility - since they are the first appreciable landmarks when approaching a populated area - and because they are "breathing" networks, their preservation depends on the social role they play. Today, in many cases, these landscapes are in a process of decline due to abandonment dynamics, disfigured by recent, overly-ambitious out-of-scale constructions, or by the residential dispersion over their historical lots. Perhaps we should look at this from another point of view based on the complexity of these hybrid spaces. This would allow the preservation of their values but would also permit their recovery as multifunctional and inhabited places.

CORTÉS MARTÍN, J.M., 2020. Sorteando los inconvenientes del artículo 7 TUE: el advenimiento del control jurisdiccional del Estado de derecho. En: journalAbbreviation: Revista de Derecho Comunitario Europeo, *Revista de Derecho Comunitario Europeo*, vol. 24, no. 66, pp. 473-517. ISSN 1138-4026. 10.18042/cepc/rdce.66.07

La réalité des dernières années a montré un nombre croissant de cas dans lesquels certains gouvernements cherchent consciemment s'éloigner systématiquement des valeurs clés de l'Union. C'est alors quand nous avons pris conscience des insuffisances de l'art. 7 TUE pour relever les défis systémiques contre ces valeurs, permettant une impasse malheureuse au Conseil. Cependant, depuis la fin de 2017, une série d'arrêts fondamentaux ont révélé la ferme volonté de la CJUE d'agir en tant que gardienne de l'orthodoxie de l'ordre constitutionnel européen pour protéger au moins l'indépendance judiciaire des États membres. Dans ce contexte, les recours en manquement par le biais de la procédure accélérée, accompagnés d'une demande intérimaire de suspension et l'ordre de payer une astreinte élevée si la violation était constatée, se sont révélées comme un moyen efficace de réagir à cette crise de l'état de droit. Aussi devant l'Union elle-même, la Cour de justice s'efforce de faire prévaloir les différents profils de l'État de droit, même si dans certains domaines l'équilibre n'est que faible. Tant que cela continue, il ne fait aucun doute qu'il existe un contraste entre le contrôle exercé par l'Union sur le respect de l'État de droit par ses institutions et l'attitude opposée à l'égard de ses États membres.

CUI, Z.-F., ZHANG, J.-L., BINOSI, D., DE SOTO, F., MEZRAG, C., PAPA VASSILIOU, J., ROBERTS, C.D., RODRIGUEZ-QUINTERO, J., SEGOVIA, J. y ZAFEIROPOULOS, S., 2020. Effective charge from lattice QCD. *Chinese Physics C*, vol. 44, no. 8, pp. 083102. ISSN 1674-1137. DOI 10.1088/1674-1137/44/8/083102.

Using lattice configurations for quantum chromodynamics (QCD) generated with three domain-wall fermions at a physical pion mass, we obtain a parameter-free prediction of QCD's renormalisation-group-invariant process-independent

effective charge, $(\alpha)_{\text{over cap}}(k(2))$. Owing to the dynamical breaking of scale invariance, evident in the emergence of a gluon mass-scale, $m(0) = 0.43(1)$ GeV, this coupling saturates at infrared momenta: $(\alpha)_{\text{over cap}}/\pi = 0.97(4)$. Amongst other things: $(\alpha)_{\text{over cap}}(k(2))$ is almost identical to the process-dependent (PD) effective charge defined via the Bjorken sum rule; and also that PD charge which, employed in the one-loop evolution equations, delivers agreement between pion parton distribution functions computed at the hadronic scale and experiment. The diversity of unifying roles played by $(\alpha)_{\text{over cap}}(k(2))$ suggests that it is a strong candidate for that object which represents the interaction strength in QCD at any given momentum scale; and its properties support a conclusion that QCD is a mathematically well-defined quantum field theory in four dimensions.

DIAZ-AGUILAR, A.L. y ESCALERA-REYES, J., 2020. Family Relations and Socio-Ecological Resilience within Locally-Based Tourism: The Case of El Castillo (Nicaragua). *Sustainability*, vol. 12, no. 15, pp. 5886. DOI 10.3390/su12155886.

Although family-run micro and small businesses largely form the crux of the locally based tourism sector, either as part of a community organization or as independent units of private enterprise, in El Castillo (Nicaragua) can be found an example of how, even in the absence of a community organization to provide a structural framework, the development of local tourism has sustained practically all businesses set up and run by households, organized largely through family relationships. This structure is pivotal in stoking resilience, not only with regard to private businesses, but also to the system of tourism (specific) and, by extension, to the whole of local society and the surrounding socio-ecosystem, or socio-ecological system (SES) (general). The case study presented here, developed on the basis of long-term ethnographic fieldwork, highlights the role of the family structure within Locally-Based Tourism (LBT) in general and also in specific cases, such as the one studied here, in which it takes on a particularly central role. The confirmation of the importance of families and family relationships as key elements in the robust development of tourism in El Castillo, and of the specific characteristics that its local society presents for this, must be taken into account in order to support Community-Based Tourism projects by institutions and organizations interested in promoting sustainable local development. Indeed, once further case studies are conducted, with a view to providing comparative evidence of these findings, it might even be proven advantageous to create a distinctive subcategory within LBT: Family-Based Tourism.

DIVINA, F., TORRES, J.F., GARCÍA-TORRES, M., MARTÍNEZ-ÁLVAREZ, F. y TRONCOSO, A., 2020. Hybridizing deep learning and neuroevolution: Application to the Spanish short-term electric energy consumption forecasting. *Applied Sciences (Switzerland)*, vol. 10, no. 16. DOI 10.3390/app10165487

The electric energy production would be much more efficient if accurate estimations of the future demand were available, since these would allow allocating only the resources needed for the production of the right amount of energy required. With this motivation in mind, we propose a strategy, based on neuroevolution, that can be used to this aim. Our proposal uses a genetic algorithm in order to find a sub-optimal set of hyper-parameters for configuring a deep neural network, which can then be used for obtaining the forecasting. Such a strategy is justified by the observation that the performances achieved by deep neural networks are strongly dependent on the right setting of the hyper-parameters, and genetic algorithms have shown excellent search capabilities in huge search spaces. Moreover, we base our proposal on a distributed computing platform, which allows its use on a large time-series. In order to assess the performances of our approach, we have applied it to a large dataset, related to the electric energy consumption registered in Spain over almost 10 years. Experimental results confirm the validity of our proposal since it outperforms all other forecasting techniques to which it has been compared. © 2020 by the authors.

DURAN, J., KATHRYN BREWER, M., HERVERA, A., GRUART, A., RIO, J.A. del, DELGADO-GARCIA, J.M. y GUINOVART, J.J., 2020. Lack of Astrocytic Glycogen Alters Synaptic Plasticity but Not Seizure Susceptibility. *Molecular Neurobiology*, ISSN 0893-7648. DOI 10.1007/s12035-020-02055-5.

Brain glycogen is mainly stored in astrocytes. However, recent studies both in vitro and in vivo indicate that glycogen also plays important roles in neurons. By conditional deletion of glycogen synthase (GYS1), we previously developed a mouse model entirely devoid of glycogen in the central nervous system (GYS1(Nestin-KO)). These mice displayed altered electrophysiological properties in the hippocampus and increased susceptibility to kainate-induced seizures. To understand which of these functions are related to astrocytic glycogen, in the present study, we generated a mouse model in which glycogen synthesis is eliminated specifically in astrocytes (GYS1(Gfap-KO)). Electrophysiological recordings of awake behaving mice revealed alterations in input/output curves and impaired long-term potentiation, similar, but to a lesser extent, to those obtained with GYS1(Nestin-KO)mice. Surprisingly, GYS1(Gfap-KO)mice displayed no change in susceptibility to kainate-induced seizures as determined by fEPSP recordings and video monitoring. These results confirm the importance of astrocytic glycogen in synaptic plasticity.

ESMAEILI, Mohadeseh, KESHANI, M., VAKILIAN, M., ESMAEILI, Maryam, PEYMANI, M., SEYED FOROOTAN, F., CHAU, T.L., ISMAIL GOKTUNA, S., ZAKER, S.R., NASR ESFAHANI, M.H. y GHAEDI, K., 2020. Role of non-coding RNAs as novel biomarkers for detection of colorectal cancer progression through interaction with the cell signaling pathways. *Gene*, vol. 753, pp. 144796. ISSN 0378-1119. DOI 10.1016/j.gene.2020.144796.

Colorectal cancer (CRC) is one of the most common types of cancer which affects the colon and the rectum. Approximately one third of annual CRC mortality occurs due to the late detection of this type of cancer. Therefore, there is an urgent need

for more powerful diagnostic and prognostic tools for identification and treatment of colorectal tumorigenesis. Non-coding RNAs (ncRNAs) have been implicated in the pathology of CRC and also linked to metastasis, proliferation, differentiation, migration, angiogenesis and apoptosis in numerous cancers. Recently, attention has turned towards ncRNAs as specific targets for diagnosis, prognosis and treatment of various types of cancers, including CRC. In this review, we have tried to outline the roles of ncRNAs, and their involvement in signaling pathways responsible for the progression of CRC.

EXPOSITO-SERRANO, M., SANCHEZ-MOLINA, A., GALLARDO, P., SALAS-PINO, S. y DAGA, R.R., 2020. Selective Nuclear Pore Complex Removal Drives Nuclear Envelope Division in Fission Yeast. *Current Biology*, vol. 30, no. 16, pp. 3212-+. ISSN 0960-9822. DOI 10.1016/j.cub.2020.05.066.

An important question in cell biology is how cellular organelles partition during cell division. In organisms undergoing closed mitosis, the elongation of an intranuclear spindle drives nuclear division, generating two identically sized nuclei [1, 2]. However, how the site of nuclear division is determined and the underlying mechanism driving nuclear envelope (NE) fission remain largely unknown. Here, using the fission yeast, we show that the microtubule bundler Ase1/PRC1 at the spindle midzone is required for the local concentration of nuclear pore complexes (NPCs) in the region of the NE in contact with the central spindle. As the spindle elongates during anaphase B, components of these NPCs are sequentially eliminated, and this is accompanied by the local remodeling of the NE. These two events lead to the eventual removal of NPCs and nuclear division. In the absence of importin alpha, NPCs remain stable in this region and no event of NE remodeling is observed. Consequently, cells fail to undergo nuclear division. Thus, our results highlight a new role of the central spindle as a spatial cue that determines the site of nuclear division and point to NPC removal as the triggering event.

FALCES PRIETO, M., GONZÁLEZ FERNÁNDEZ, F.T., BAENA MORALES, S., BENÍTEZ JIMÉNEZ, A., MARTÍN BARRERO, A. y CONDE FERNÁNDEZ, L., 2020. Efectos de un programa de entrenamiento de fuerza con autocargas sobre el rendimiento de salto con contramovimiento y la composición corporal en jugadores de fútbol jóvenes. En: journalAbbreviation: Journal of sport and health research, *Journal of sport and health research*, vol. 12, no. 1, pp. 112-125. ISSN 1989-6239.

The purpose of this study was to investigate the effects of self-loading strength training program (SLSTP) on countermovement jump performance (CMJ) and body composition (BC) in young soccer players. 60 young soccer players were distributed in 4 groups [U16 $14,67 \pm 0,49$ years); U17 ($15,73 \pm 0,46$); U18 ($16,67 \pm 0,82$); U19 ($18,27 \pm 0,46$)]. Completed a strength training program with self-loading during 8 weeks with weekly training frequency of 2 sessions of 1 hour per week. CMJ performed with the app My Jump® and BC were analyzed with Bioelectrical Impedance Analysis method (BIA). Data were collected pre- and post-intervention. The effect size (ES) was calculated and a level of significance of

$p < 0,05$. The main results of the study showed a significant increase in U19 group ($p < 0,01$) in CMJ performance. A significant decrease in body mass in U17 group ($p < 0,001$). U17 and U19 groups showed a significant decrease in % fat mass ($p < 0,001$) and, finally, there was a significant increase in lean mass ($p < 0,001$) in all groups. The present study confirms that the strength training with self-loading is a valid method to produce changes at the neuromuscular level and modification of body composition in young soccer players-

FERNANDEZ-MARTINEZ, A., HARO-GONZALEZ, M., NUVIALA, R., PEREZ-ORDAS, R. y NUVIALA, A., 2020. Women and Physical Activity in Fitness Centres. Analysis of Future Intentions and Their Relationship with Age. *International Journal of Environmental Research and Public Health*, vol. 17, no. 15, pp. 5289. DOI 10.3390/ijerph17155289.

Physical activity is an important tool for promoting women's health. Increasing adherence to physical activity is a challenge for governments and private entities. One of the main objectives of the fitness sector is to build customer loyalty. Their behavioural intentions according to gender and age may be a determining factor. The aim of this study was to establish a model that relates the fitness centre's quality as perceived by female customers, these customers' future intentions, satisfaction, and age. A total of 745 women participated in this study, with a mean age of 32.97 +/- 14.11, divided into three age groups. A confirmatory analysis, a factor invariance analysis, and a multi-group analysis were conducted to verify the validity and reliability of the model. The results revealed that quality is an antecedent of both perceived value and satisfaction in the three age groups. Perceived value is a precursor of satisfaction, except in the group of women over 45 years old. The only antecedent to adaptation to price is quality, except in the older age group. Finally, perceived value was found to be related to adaptation to price. These results will facilitate the development of strategies to promote physical activity among women according to their age.

FLORES PRADA, I., 2020. Alternativas al enjuiciamiento de acusados con falta de capacidad procesal por trastorno mental grave. En: journal Abbreviation: *Práctica de tribunales: revista de derecho procesal civil y mercantil*, *Práctica de tribunales: revista de derecho procesal civil y mercantil*, no. 145, pp. 4-4. ISSN 1697-7068.

In cases in which defendants are incompetent to stand trial due to severe mental disorder before the process and along it, the Spanish Criminal Procedure Code establishes that, once the investigation is completed, the trial must be opened against those defendants, in order to impose a security measure in case of acquittal because of exemption from criminal liability. Regarding legal doctrine, modern jurisprudence and EU law, the exercise of a criminal action against someone who lacks competency to stand trial for serious mental disorder violates the right to an effective judicial protection and to a fair trial. In this paper it will be analyzed the current Spanish regulation related to the lack of competency to stand trial of insane

defendants. Moreover, interpretative and legal alternatives will be proposed with the aim to improve the constitutionally debatable solution in force.

GARCIA, A.G., TUINIER, R., DE WITH, G. y CUETOS, A., 2020. Directional-dependent pockets drive columnar-columnar coexistence. *Soft Matter*, vol. 16, no. 29, pp. 6720-6724. ISSN 1744-683X. DOI 10.1039/d0sm00802h.

The rational design of materials requires a fundamental understanding of the mechanisms driving their self-assembly. This may be particularly challenging in highly dense and shape-asymmetric systems. Here we show how the addition of tiny non-adsorbing spheres (depletants) to a dense system of hard disc-like particles (discotics) leads to coexistence between two distinct, highly dense (liquid)-crystalline columnar phases. This coexistence emerges due to the directional-dependent free-volume pockets for depletants. Theoretical results are confirmed by simulations explicitly accounting for the binary mixture of interest. We define the stability limits of this columnar-columnar coexistence and quantify the directional-dependent depletant partitioning.

GARCÍA, Á.G., TUINIER, R., DE WITH, G. y CUETOS, A., 2020. Erratum: Directional-dependent pockets drive columnar-columnar coexistence (*Soft Matter* (2020) DOI: 10.1039/d0sm00802h). *Soft Matter*, vol. 16, no. 29, pp. 6933. DOI 10.1039/d0sm90143a

The authors regret the incorrect affiliation for two of the authors, Remco Tuinier and Gijbertus de With. The corrected list of affiliations is as shown here. The Royal Society of Chemistry apologises for these errors and any consequent inconvenience to authors and readers. © The Royal Society of Chemistry.

GARCÍA RODRÍGUEZ, M.J., 2020. El nuevo estatuto jurídico de las víctimas del delito ante el sistema de justicia penal juvenil. En: journalAbbreviation: Revista General de Derecho Penal, *Revista General de Derecho Penal*, no. 33, pp. 18- 0. ISSN 1698-1189.

Although in the criminal law of minors, the best interest of the minor, LO 5/2000, of 12 January, regulating criminal responsibility, must prevail as a determining element of the procedure and the measures adopted therein of minors, neither does it forget the self-interest of the victims or the injured in this jurisdiction. Recognizing them a set of rights that will be analyzed in this work, which have been reinforced after the last legislative reforms operated in their original text by LO 15/2003 and LO 8/2006, and now they will have to be interpreted in light of the provisions of the new statute of the victim of the crime approved by Law 4/2015, of April 27. Whose application to juvenile criminal jurisdiction, although with certain limitations as we will argue in our study, we consider that it must be effective to offer an adequate response to the needs of victims who are forced to participate in it.

GARCÍA-VELÁZQUEZ, L., RODRÍGUEZ, A., GALLARDO, A., MAESTRE, F.T., DOS SANTOS, E., LAFUENTE, A., FERNÁNDEZ-ALONSO, M.J., SINGH, B.K., WANG, J.-T. y DURÁN, J., 2020. Climate and soil micro-organisms drive soil phosphorus fractions in coastal dune systems. *Functional Ecology*, vol. 34, no. 8, pp. 1690-1701. DOI 10.1111/1365-2435.13606

The importance of soil phosphorus (P) is likely to increase in coming decades due to the growing atmospheric nitrogen (N) deposition originated by industrial and agricultural activities. We currently lack a proper understanding of the main drivers of soil P pools in coastal dunes, which rank among the most valued priority conservation areas worldwide. Here, we evaluated the joint effects of biotic (i.e. microbial abundance and richness, vegetation and cryptogams cover) and abiotic (i.e. pH and aridity) factors on labile, medium-lability and recalcitrant soil P pools across a wide aridity gradient in the Atlantic coast of the Iberian Peninsula. Climate determined the availability of medium-lability, recalcitrant and total P, but had a minor net effect on labile P, which was positively and significantly related to the presence of plants, mosses and lichens. Medium-lability P was significantly influenced by soil bacterial richness and abundance (positively and negatively, respectively). Our results suggest that micro-organisms transfer P from medium-lability pool to more labile one. At the same time, increases in bacterial richness associated to biofilms might be involved in the thickening of the medium-lability P pool in our climosequence. These bacterial-mediated transfers would confer resistance to the labile P pool under future climate change and uncover an important role of soil micro-organisms as modulators of the geochemical P cycle. © 2020 British Ecological Society

GERRARD, D.T., BERRY, A.A., JENNINGS, R.E., BIRKET, M.J., ZARRINEH, P., GARSTANG, M.G., WITHEY, S.L., SHORT, P., JIMENEZ-GANCEDO, S., FIRBAS, P.N., DONALDSON, I., SHARROCKS, A.D., HANLEY, K.P., HURLES, M.E., GOMEZ-SKARMETA, J.L., BOBOLA, N. y HANLEY, N.A., 2020. Dynamic changes in the epigenomic landscape regulate human organogenesis and link to developmental disorders. *Nature Communications*, vol. 11, no. 1, pp. 3920. ISSN 2041-1723. DOI 10.1038/s41467-020-17305-2.

How the genome activates or silences transcriptional programmes governs organ formation. Little is known in human embryos undermining our ability to benchmark the fidelity of stem cell differentiation or cell programming, or interpret the pathogenicity of noncoding variation. Here, we study histone modifications across thirteen tissues during human organogenesis. We integrate the data with transcription to build an overview of how the human genome differentially regulates alternative organ fates including by repression. Promoters from nearly 20,000 genes partition into discrete states. Key developmental gene sets are actively repressed outside of the appropriate organ without obvious bivalency. Candidate enhancers, functional in zebrafish, allow imputation of tissue-specific and shared patterns of transcription factor binding. Overlaying more than 700 noncoding mutations from patients with developmental disorders allows correlation to unanticipated target genes. Taken together, the data provide

a comprehensive genomic framework for investigating normal and abnormal human development. How the epigenomic landscape linked to transcription regulates human embryonic development is unclear. Here, the authors analyse the dynamics of H3K27Ac, H3K4me3 and H3K27me3 during the period when organs first assemble as a platform for understanding noncoding developmental disorders.

GOEMEZ-GONZALEZ, B. y AQUILERA, A., 2020. Looping the (R) Loop in DSB Repair via RNA Methylation. *Molecular Cell*, vol. 79, no. 3, pp. 361-362. ISSN 1097-2765. DOI 10.1016/j.molcel.2020.07.015.

In this issue of *Molecular Cell*, Zhang et al. (2020) reveal that ATM triggers RNA methylation of DNA-RNA hybrids formed at double-strand breaks (DSBs) to modulate repair, adding a new layer of complexity to RNA's role in the DNA damage response.

GOMEZ, J.M., PERFECTTI, F., ARMAS, C., NARBONA, E., GONZALEZ-MEGIAS, A., NAVARRO, L., DESOTO, L. y TORICES, R., 2020. Within-individual phenotypic plasticity in flowers fosters pollination niche shift. *Nature Communications*, vol. 11, no. 1, pp. 4019. ISSN 2041-1723. DOI 10.1038/s41467-020-17875-1.

Phenotypic plasticity, the ability of a genotype of producing different phenotypes when exposed to different environments, may impact ecological interactions. We study here how within-individual plasticity in *Moricandia arvensis* flowers modifies its pollination niche. During spring, this plant produces large, cross-shaped, UV-reflecting lilac flowers attracting mostly long-tongued large bees. However, unlike most co-occurring species, *M. arvensis* keeps flowering during the hot, dry summer due to its plasticity in key vegetative traits. Changes in temperature and photoperiod in summer trigger changes in gene expression and the production of small, rounded, UV-absorbing white flowers that attract a different assemblage of generalist pollinators. This shift in pollination niche potentially allows successful reproduction in harsh conditions, facilitating *M. arvensis* to face anthropogenic perturbations and climate change. Floral phenotypes impact interactions between plants and pollinators. Here, the authors show that *Moricandia arvensis* displays discrete seasonal plasticity in floral phenotype, with large, lilac flowers attracting long-tongued bees in spring and small, rounded, white flowers attracting generalist pollinators in summer.

GONZÁLEZ-JURADO, J.A., SUÁREZ-CARMONA, W., LÓPEZ, S. y SÁNCHEZ-OLIVER, A.J., 2020. Changes in Lipoinflammation Markers in People with Obesity after a Concurrent Training Program: A Comparison between Men and Women. *International journal of environmental research and public health*, vol. 17, no. 17. DOI 10.3390/ijerph17176168

Obesity is related to low-grade systemic inflammation. This state of inflammation is

characterized by the alteration in adipokine regulation, which may lead to a situation of cardiometabolic risk. The aim of this study was to evaluate the effects of a concurrent training program on markers of lipoinflammation in adult people with obesity, comparing the response to the training between men and women. A quasi-experimental, quantitative, and longitudinal study with a pre-post intervention was conducted. An 8-week concurrent training program was carried out, in which 26 individuals with obesity participated (mean \pm SD; age = 46.38 \pm 4.66) (BMI = 36.05 \pm 4.99) (12 men and 14 women). Before and after the intervention period, blood samples were taken by percutaneous puncture. The blood levels of adiponectin and leptin were evaluated. Significant differences were obtained in the adiponectin-leptin ratio (A/L ratio) of the entire sample ($p = 0.009$, ES = 0.53), which indicates a decrease in the risk of cardiovascular diseases and lipoinflammation. There were no significant differences in the improvements observed after the training in A/L ratio between women (A/L change = +63.5%) and men (A/L change = +59.2%). It can be concluded that the combination of aerobic exercise and resistance training induced an improvement in markers of lipoinflammation and cardiometabolic risk in the individuals with obesity evaluated in this study.

GONZÁLEZ-ZAMAR, M.-D., ABAD-SEGURA, E., VÁZQUEZ-CANO, E. y LÓPEZ-MENESES, E., 2020. IoT technology applications-based smart cities: Research analysis. *Electronics (Switzerland)*, vol. 9, no. 8, pp. 1-36. DOI 10.3390/electronics9081246

The development of technologies enables the application of the Internet of Things (IoT) in urban environments, creating smart cities. Hence, the optimal management of data generated in the interconnection of electronic sensors in real time improves the quality of life. The objective of this study is to analyze global research on smart cities based on IoT technology applications. For this, bibliometric techniques were applied to 1232 documents on this topic, corresponding to the period 2011–2019, to obtain findings on scientific activity and the main thematic areas. Scientific production has increased annually, so that the last triennium has accumulated 83.23% of the publications. The most outstanding thematic areas were Computer Science and Engineering. Seven lines have been identified in the development of research on smart cities based on IoT applications. In addition, the study has detected seven new future research directions. The growing trend at the global level of scientific production shows the interest in developing aspects of smart cities based on IoT applications. This study contributes to the academic, scientific, and institutional discussion to improve decision making based on the available information. © 2020 by the authors. Licensee MDPI, Basel, Switzerland.

GORJÓN, L., DE LA RICA, S. y VILLAR, A., 2020. The Cost of Unemployment from a Social Welfare Approach: The Case of Spain and Its Regions. *Social Indicators Research*, vol. 150, no. 3, pp. 955-976. DOI 10.1007/s11205-020-02360-5

This paper proposes a protocol to measure the cost of unemployment by taking into

account three different aspects: incidence, severity and hysteresis. Incidence refers to the conventional unemployment rate; severity takes into account both unemployment duration and the associated income loss; and hysteresis refers to the probability of remaining unemployed. The cost of unemployment is regarded as a welfare loss, which is measured by a utilitarian social welfare function whose arguments are the individual disutilities of unemployed workers. Each individual disutility is modelled as a function of income loss, unemployment duration and hysteresis. The resulting formula is simple and easy to understand and implement. We apply this assessment protocol to the Spanish labour market, focusing on the regional differences and using the official register of unemployed workers compiled by the Public Employment Service. © 2020, Springer Nature B.V.

GRIMALDI PUYANA, M., GÁLVEZ RUIZ, P., VALCARCE TORRENTE, M. y BERNAL GARCÍA, A., 2020. The profile of leisure time sports people and their reason for doing sport in Spanish sports facilities. En: journalAbbreviation: European Journal of Government and Economics, *European Journal of Government and Economics*, vol. 9, no. 2, pp. 210-219. ISSN 2254-7088. 10.17979/ejge.2020.9.2.5846

In Spanish sports habits, there exists a clear increase of the institutionalised sports practice and a distinct trend of leisure and recreational sport. This motivates the current work as it is necessary to go deeply into the knowledge of this practice. The aims proposed are twofold. On the one hand, to perform an analysis of the profile and the characteristics of the behaviour of the users of sports centres and leisure and recreational sportspeople. And, on the other hand, to study the motives of leisure/recreational sports practice. A descriptive quantitative methodology has been followed in this research. The description of the profile of users emerges from the data analysed as well as that they practise sport for exotelic reasons. The results obtained can serve managers to orientate their strategies destined to satisfy the needs of these users.

GUIJO PÉREZ, S., 2020. Actas del Libro de Profesiones del Monasterio de San Leandro de Sevilla (1700-1868). En: journalAbbreviation: Archivo Agustiniiano, *Archivo Agustiniiano*, vol. 104, no. 222, pp. 85-124. ISSN 0211-2035.

HERNÁNDEZ JIMÉNEZ, H.M., 2020. Medidas de agilización de la actividad urbanística: novedades normativas para la era post Covid-19. En: journalAbbreviation: Actualidad administrativa, *Actualidad administrativa*, no. 7, pp. 10- 0. ISSN 1130-9946.

HERNÁNDEZ-CAMACHO, J.D., VICENTE-GARCÍA, C., PARSONS, D.S. y NAVAS-ENAMORADO, I., 2020. Zinc at the crossroads of exercise and proteostasis. *Redox Biology*, vol. 35. DOI 10.1016/j.redox.2020.101529

Zinc is an essential element for all forms of life, and one in every ten human proteins is a zinc protein. Zinc has catalytic, structural and signalling functions and its correct homeostasis affects many cellular processes. Zinc deficiency leads to detrimental

consequences, especially in tissues with high demand such as skeletal muscle. Zinc cellular homeostasis is tightly regulated by different transport and buffer protein systems. Specifically, in skeletal muscle, zinc has been found to affect myogenesis and muscle regeneration due to its effects on muscle cell activation, proliferation and differentiation. In relation to skeletal muscle, exercise has been shown to modulate zinc serum and urinary levels and could directly affect cellular zinc transport. The oxidative stress induced by exercise may provide the basis for the mild zinc deficiency observed in athletes and could have severe consequences on health and sport performance. Proteostasis is induced during exercise and zinc plays an essential role in several of the associated pathways. © 2020

LABRADOR HERRERA, G., PACHÓN DÍAZ, J., PACHÓN IBÁÑEZ, M.E. y ACEDO BÉCARES, A., 2020. *Integration of omics and bioinformatics to identify new therapeutic targets for Acinetobacter baumannii. Virulence role of CarO in Acinetobacter baumannii infections*. S.l.: s.n.

Acinetobacter baumannii remains a significant and difficult-to-treat pathogen that causes a range of interactions with the human host from asymptomatic colonization and carriage in the skin, intestinal tract, and respiratory tract to invasive infection, such as nosocomial pneumonia or bacteraemia. Especially, this pathogen affects critically-ill and immunocompromised patients admitted to Intensive Care Units (ICUs), causing them severe infections, which are associated with long hospital stay and high mortality rates. The success of this bacterium is due to a combination of several factors, highlighting its extraordinary ability to develop antimicrobial resistance that results in the rapid nosocomial spread of strains resistant to almost all known antimicrobials, including including the last reservoirs of our antimicrobial arsenal such as the carbapenems, worldwide. Thus, in the recent global priority list of antimicrobial-resistant bacteria of the World Health Organization, carbapenem-resistant *A. baumannii* (CRAB) is considered as a “critical priority” for the development of new antimicrobials, due to the lack of therapeutic options. This situation has promoted the search of new therapeutic strategies to deal with multidrug-resistant (MDR) *A. baumannii* strains displaying additional carbapenem-resistance, and non-antimicrobial approaches aimed at bacterial virulence factors may represent a promising alternative. Nevertheless, our knowledge on *A. baumannii* pathogenesis and virulence traits is still relatively scarce. In this Doctoral Thesis, and in order to stop the evolution of *A. baumannii* infections, we aimed to study more deeply the pathogenesis of CRAB infections using omics and bioinformatics to ultimately discover new therapeutic targets for anti-*A. baumannii* drugs. Firstly, we studied MDR/CRAB isolates from tracheobronchial aspirate samples of ICU adult patients who suffered *A. baumannii* bacteraemic ventilator-associated pneumonia (VAP) or remained exclusively colonised by this pathogen. We analysed the *in vitro* and *in vivo* virulence of these isolates, in order to know if the invasive isolates exhibited higher virulence than the colonising ones, but no differences were found. Moreover, when the whole-genome sequencing (WGS) data of these isolates were analysed following different approaches, again we did not find any difference between both phenotypes regarding their clonal relationship, antimicrobial resistance mechanisms, or known virulence determinants. However, the invasive

A. baumannii isolates exhibited higher levels of expression of the outer membrane protein (OMP) OmpA than the colonising ones, suggesting that those phenotypes depend on the regulation of already-known or still unknown virulence factors, instead of on the genomic content. Secondly, six bacteraemic MDR/CRAB clinical isolates obtained from six clinically homogeneous ICU adult patients with bacteraemia secondary to VAP, who were subjected to optimal colistin treatment but with radically different clinical outcomes, were comparatively analyzed by WGS complemented with proteomic and immunoblot techniques. These analyses indicated that the *carO* gene, encoding for the second most abundant β -barrel protein of the *A. baumannii* outer membrane (OM), CarO, was interrupted by different disruptive events in the isolates from patients who recovered from infection, while it was intact in the isolates from patients who did not survive. When the virulence role of *A. baumannii* CarO was analyzed in model systems, an isogenic mutant lacking *carO* (ATCC 17978 Δ *carO*) showed lower ability *in vitro* to adhere and invade cultured human lung epithelial cells, and exhibited a higher minimum lethal dose and a lower dissemination potential into essential organs and fluids in a murine model of peritoneal sepsis. All of the above deficiencies were reverted in the ATCC 17978 Δ *carO* mutant transformed with a *carO* expression plasmid restoring OM CarO levels. Thus, the results presented here reveal a previously unnoticed virulence role for the *A. baumannii* OMP CarO, which may be responsible of the poor clinical outcome and therefore a potential target for the development of novel anti-*A. baumannii* drugs.

LAFUENTE-BARQUERO, J., GARCIA-RUBIO, M.L., SAN MARTIN-ALONSO, M., GOMEZ-GONZALEZ, B. y AGUILERA, A., 2020. Harmful DNA:RNA hybrids are formed in cis and in a Rad51-independent manner. *Elife*, vol. 9, pp. e56674. ISSN 2050-084X. DOI 10.7554/eLife.56674.

DNA:RNA hybrids constitute a well-known source of recombinogenic DNA damage. The current literature is in agreement with DNA:RNA hybrids being produced co-transcriptionally by the invasion of the nascent RNA molecule produced in cis with its DNA template. However, it has also been suggested that recombinogenic DNA:RNA hybrids could be facilitated by the invasion of RNA molecules produced in trans in a Rad51-mediated reaction. Here, we tested the possibility that such DNA:RNA hybrids constitute a source of recombinogenic DNA damage taking advantage of Rad51-independent single-strand annealing (SSA) assays in the yeast *Saccharomyces cerevisiae*. For this, we used new constructs designed to induce expression of mRNA transcripts in trans with respect to the SSA system. We show that unscheduled and recombinogenic DNA:RNA hybrids that trigger the SSA event are formed in cis during transcription and in a Rad51-independent manner. We found no evidence that such hybrids form in trans and in a Rad51-dependent manner.

LATORRE-ROMAN, P.A., CONSUEGRA GONZALEZ, P.J., MARTINEZ-REDONDO, M., CARDONA LINARES, A.J., SALAS-SANCHEZ, J., LUCENA ZURITA, M., MANJON POZAS, D., PEREZ JIMENEZ, I., ARAGON-VELA, J., GARCIA-PINILLOS, F., ROBLES-FUENTES, A. y PARRAGA-

MONTILLA, J.A., 2020. Complex Gait in Preschool Children in a Dual-Task Paradigm Is Related to Sex and Cognitive Functioning: A Cross-Sectional Study Providing an Innovative Test and Reference Values. *Mind Brain and Education*, ISSN 1751-2271. DOI 10.1111/mbe.12256.

The purpose of this study was to design and validate a complex gait test (CGT) in preschool children and to examine the relationship between CGT performance and age, sex, and cognitive functioning. A total of 1,040 preschool children, aged 3 to 6 years, participated in this study. In all children, standardized dynamic balance test, and several cognitive functioning measures were used. The results indicate that the CGT has adequate reliability and validity. In the test-retest analysis (n = 90), the intraclass correlation coefficient was 0.901 (p < .001). A significant correlation between the initial test and retest (r = 0.821, p < .001) and between the CGT and dynamic balance test (r = -0.432, p < .001), Porteus Maze Test (PMT) (r = -0.416, p = .011), and Goodenough-Harris Drawing Test (GHDT) (r = -0.386, p < .001) was found. Boys showed a better performance than girls at 3-6 years old. The CGT showed excellent reliability and validity in preschool children and may serve as a potential biomarker in cognitive development.

LÁZARO-PÉREZ, C., MARTÍNEZ-LÓPEZ, J.Á., GÓMEZ-GALÁN, J. y LÓPEZ-MENESES, E., 2020. Anxiety about the risk of death of their patients in health professionals in Spain: Analysis at the peak of the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, vol. 17, no. 16, pp. 1-16. DOI 10.3390/ijerph17165938

The COVID-19 health crisis has had a global effect, but the consequences in the different countries affected have been very different. In Spain, in a short period of time, health professionals went from a situation of stability to living with a working environment characterized by overcrowded hospitals, lack of individual protection equipment, non-existent or contradictory work protocols, as well as an unknown increase in mortality. Although in their professional activity health workers are closely linked to death processes, in recent months, working conditions and health emergencies have drawn an unheard of working scenario, with the stress and anxiety they may suffer when faced with the death of their patients. The present quantitative research was carried out in different hospitals in Spain on health professionals during the month of April 2020. Through the subscale of anxiety in the face of the death of others, developed by Collett-Lester, it has been verified that health professionals have had to develop their work in a context of precariousness, putting at risk both their individual and collective health, notably increasing anxiety in the face of the death of their patients. The predictive variables of this anxiety have been the absence of individual protection equipment, as well as high levels in the burnout subscales of emotional exhaustion and depersonalization. © 2020 by the authors.

LUNA-SANCHEZ, M., BENINCA, C., CERUTTI, R., BREA-CALVO, G., YEATES, A., SCORRANO, L., ZEVIANI, M. y VISCOMI, C., 2020. Opa1 Overexpression

Protects from Early-Onset Mpv17(-/-)-Related Mouse Kidney Disease. *Molecular Therapy*, vol. 28, no. 8, pp. 1918-1930. ISSN 1525-0016. DOI 10.1016/j.ymthe.2020.06.010.

Moderate overexpression of Opa1, the master regulator of mitochondrial cristae morphology, significantly improved mitochondrial damage induced by drugs, surgical denervation, or oxidative phosphorylation (OXPHOS) defects due to specific impairment of a single mitochondrial respiratory chain complex. Here, we investigated the effectiveness of this approach in the Mpv17(-/-) mouse, characterized by profound, multisystem mitochondrial DNA (mtDNA) depletion. After the crossing with Opa1(tg) mice, we found a surprising anticipation of the severe, progressive focal segmental glomerulosclerosis, previously described in Mpv17(-/-) animals as a late-onset clinical feature (after 12-18 months of life). In contrast, Mpv17(-/-) animals from this new «mixed» strain died at 8-9 weeks after birth because of severe kidney failure. However, Mpv17(-/-)::Opa1(tg) mice lived much longer than Mpv17(-/-) littermates and developed the kidney dysfunction much later. mtDNA content and OXPHOS activities were significantly higher in Mpv17(-/-)::Opa1(tg) than in Mpv17(-/-) kidneys and similar to those for wild-type (WT) litter-mates. Mitochondrial network and cristae ultrastructure were largely preserved in Mpv17(-/-)::Opa1(tg) versus Mpv17(-/-) kidney and isolated podocytes. Mechanistically, the protective effect of Opa1 overexpression in this model was mediated by a block in apoptosis due to the stabilization of the mitochondrial cristae. These results demonstrate that strategies aiming at increasing Opa1 expression or activity can be effective against mtDNA depletion syndromes.

MANZANO-LÓPEZ, J. y MONJE-CASAS, F., 2020. Asymmetric cell division and replicative aging: a new perspective from the spindle poles. *Current Genetics*, vol. 66, no. 4, pp. 719-727. DOI 10.1007/s00294-020-01074-y

Although cell division is usually portrayed as an equitable process by which a progenitor cell originates two identical daughter cells, there are multiple examples of asymmetric divisions that generate two cells that differ in their content, morphology and/or proliferative potential. The capacity of the cells to generate asymmetry during their division is of paramount biological relevance, playing essential roles during embryonic development, cellular regeneration and tissue morphogenesis. Problems with the proper establishment of asymmetry and polarity during cell division can give rise to cancer and neurodevelopmental disorders, as well as to also accelerate cellular aging. Interestingly, the microtubule organizing centers that orchestrate the formation of the mitotic spindle have been described among the cellular structures that can be differentially allocated during asymmetric cell divisions. This mini-review focuses on recent research from our group and others uncovering a role for the non-random distribution of the spindle-associated microtubule organizing centers in the differential distribution of aging factors during asymmetric mitoses and therefore in the maintenance of the replicative lifespan of the cells. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

MARTÍNEZ LÓPEZ, D., 2020. La gobernanza fiscal de las Comunidades Autónomas: una valoración crítica de su estado actual con perspectivas de reforma. En: journalAbbreviation: *Investigaciones Regionales = Journal of Regional Research, Investigaciones Regionales = Journal of Regional Research*, no. 47, pp. 31-56. ISSN 1695-7253. 10.38191/iirr-jorr.20.009

This paper provides a critical assessment of the current legislation on budget stability for the case of the Spanish regions. Particularly, the paper focuses on its very limited effectiveness for the compliance of the deficit and expenditure rules objectives. Moreover, the application of this legislation has experienced significant failures in dealing with the transitory period, the application of the corrective mechanisms, the lack of higher automatism and the interpretation of some provisions related to budget surplus and nonexpected fiscal revenues. The possible reform of such legislation should take into consideration a number of issues, namely, the reform of the European economic governance, the changes in the Spanish territorial financing system and the complete revision (if not elimination) of the extraordinary financial funds.

MARTÍNEZ, R.C., 2020. Physiotherapy in front of Covid-19: Profession and science at the service of humanity. *Cuestiones de Fisioterapia*, vol. 49, no. 2, pp. 85-88

MARTINEZ-ALVAREZ, F., ASECIO-CORTES, G., TORRES, J.F., GUTIERREZ-AVILES, D., MELGAR-GARCIA, L., PEREZ-CHACON, R., RUBIO-ESCUADERO, C., RIQUELME, J.C. y TRONCOSO, A., 2020. Coronavirus Optimization Algorithm: A Bioinspired Metaheuristic Based on the COVID-19 Propagation Model. *Big Data*, vol. 8, no. 4, pp. 308-322. ISSN 2167-6461. DOI 10.1089/big.2020.0051.

This study proposes a novel bioinspired metaheuristic simulating how the coronavirus spreads and infects healthy people. From a primary infected individual (patient zero), the coronavirus rapidly infects new victims, creating large populations of infected people who will either die or spread infection. Relevant terms such as reinfection probability, super-spreading rate, social distancing measures, or traveling rate are introduced into the model to simulate the coronavirus activity as accurately as possible. The infected population initially grows exponentially over time, but taking into consideration social isolation measures, the mortality rate, and number of recoveries, the infected population gradually decreases. The coronavirus optimization algorithm has two major advantages when compared with other similar strategies. First, the input parameters are already set according to the disease statistics, preventing researchers from initializing them with arbitrary values. Second, the approach has the ability to end after several iterations, without setting this value either. Furthermore, a parallel multivirus version is proposed, where several coronavirus strains evolve over time and explore wider search space areas in less iterations. Finally, the metaheuristic has been combined with deep learning models, to find optimal hyperparameters during the training phase. As application case, the problem of electricity load time series forecasting has been addressed, showing quite remarkable performance.

MILLAN, A., MILLAN, J.M. y CACADOR-RODRIGUES, L., 2020. Disclosing «masked employees» in Europe: job control, job demands and job outcomes of «dependent self-employed workers». *Small Business Economics*, vol. 55, no. 2, pp. 461-474. ISSN 0921-898X. DOI 10.1007/s11187-019-00245-7.

In this study, we examine whether job control, job demands and job outcomes of «dependent self-employed workers», i.e. the workers in this particular grey zone between employment and self-employment, are more similar to those of the self-employed or paid employed. To this end, we use microdata drawn from the 2010 wave of the European Working Conditions Survey for 34 European countries. First, we develop and validate a psychometrically sound multidimensional scale for these 3 key constructs by conducting both exploratory and confirmatory factor analysis. Then, multilevel (hierarchical) linear regressions are used to test the validity of our hypotheses. Our results suggest that these hybrid work relationships are endowed with the least favourable attributes of both groups: lower job control than self-employed workers, higher job demands than paid employees and, overall, worse job outcomes than both.

MOLEON, M., CORTES-AVIZANDA, A., PEREZ-GARCIA, J.M., BAUTISTA, J., GEOGHEGAN, C., CARRETE, M., AMAR, A., SANCHEZ-ZAPATA, J.A. y DONAZAR, J.A., 2020. Distribution of avian scavengers inside and outside of protected areas: contrasting patterns between two areas of Spain and South Africa. *Biodiversity and Conservation*, ISSN 0960-3115. DOI 10.1007/s10531-020-02027-0.

Protected areas are central to the conservation of biodiversity across the globe. However, their performance, especially in relation to highly mobile species, is largely dependent on the socio-ecological characteristics of the landscape that surrounds them. Here, we assess the patterns of avian scavenger distribution, including both obligate (i.e., vultures) and facultative (corvids and other raptors) scavenger species, inside and outside of protected areas. We contrast the situation between an African area, which has protected areas surrounded by mostly subsistence stockbreeding (KwaZulu-Natal Province, South Africa) and a European area, which has protected areas surrounded by commercial farming (Ebro Valley, Spain). We found large differences between the two areas. In the South African area, the richness and abundance of vultures, but not of facultative scavengers, were higher inside than outside of protected areas; as a result, the richness and abundance of vultures were negatively related to the distance to the nearest protected area in South Africa. In contrast, the richness and abundance of vultures in the Spanish area were similar inside and outside of protected areas. We obtained similar results when focusing solely on presence and abundance of Gyps vultures. The contrasting effects of protected areas in the distribution of avian scavengers, especially vultures, in the studied areas may be due to differences in agro-systems and socio-economical models that lead to differential availability of ungulate carcasses. We suggest that carrion shortage in the subsistence farming systems in the South African area, whereby domestic livestock carcasses are generally used by householders and thus rarely become available to vultures, should be considered alongside poisoning prevention to help conserve African vulture populations.

MONTERO-MONTERO, D., LÓPEZ-MARTÍNEZ, P., MARTÍNEZ-FERRER, B. y MORENO-RUIZ, D., 2020. Parenting dimensions and adolescent peer aggression: A gendered analysis. *Sustainability (Switzerland)*, vol. 12, no. 16. DOI 10.3390/su12166522

The present study had two main goals. The first was to analyze the differences between parenting dimensions-strictness/imposition and involvement/acceptance-in adolescents' engagement in peer aggression as aggressors, victims, aggressive victims, and non-involved. The second goal was to examine differences between parenting dimensions and peer-aggression roles by gender of both parents and adolescents. Participants were 779 adolescents (49.16% boys and 50.84% girls), aged between 12 and 16 years old ($M = 14.21$; $SD = 1.35$), enrolled in schools in Andalusia (Spain). Findings showed significant differences in parenting dimensions depending on gender of both adolescents (boy or girl) and parents (mother and father). For sons, non-involved adolescents scored higher in mother and father involvement than aggressors and aggressive victims. For daughters, non-involved scored higher in mother involvement than aggressors. Furthermore, girl aggressors and aggressive victims reported higher levels of mother imposition than non-involved. Results and their implications for sustainable development in adolescence are discussed. © 2020 by the authors.

MORAL, F. y BALANYA, J.C., 2020. Recent fault-controlled glacial deformation and its role in the fluvial capture of the Guadix-Baza basin (Betic Cordillera, southern Spain). *Geomorphology*, vol. 363, pp. 107226. ISSN 0169-555X. DOI 10.1016/j.geomorph.2020.107226.

This work is focussed on the geomorphological changes related to the Pleistocene capture of the formerly endorheic Guadix-Baza basin (Betic Cordillera). We explore the possible tectonic controls in the basin opening through a combined geomorphological and structural study. For this, we have selected a study area that includes the connecting zone between the former endorheic basin and the capture channel (Guadiana Menor River). This zone also includes the SE end of the so-called Tiscar Fault Zone (TFZ) that has been active during the Upper Miocene and onwards. We use the glacial surface that marks the end of the endorheic sedimentation (Middle-Upper Pleistocene), as the main reference surface to identify recent deformation structures. Our results indicate that the main channel crossing the Pozo Alcon glacial (Guadalentin River) shows evidence of high levels of fluvial incision and that some anomalies in the stream longitudinal profile could be correlated to the presence of pre-glacial faults linked to the TFZ. Conversely, abrupt changes in the stream orientation seems to be related to post-glacial downthrow faults. We have identified that the dextral strike-slip Tiscar Fault (the northern boundary of the TFZ) propagates towards the SE as far as the Guadalentin River, giving rise to a deformation band with oblique slip that descends the SW block down to 250 m and affects the glacial surface. Additionally, the Pozo Alcon glacial has undergone distributed deformation mainly achieved by N-S to NE-SW downthrow faults and subordinate WNW faults. The roughly E-

W extension within the Pozo Alcon glacia can be interpreted as developed in the extensional lobe at the tip of a dextral strike-slip fault (the Tiscar Fault). According to the orientation (WNW-ESE) and location of the Guadiana Menor River (following the southern boundary of the TFZ), and the relief attenuation and tilting produced by the extensional systems in the Pozo Alcon glacia, we interpret that the later stages of TFZ activity probably controlled and favoured the localisation of the basin capture. (C) 2020 Elsevier B.V. All rights reserved.

MORENO-TERNERO, J.D., TSAY, M.-H. y YEH, C.-H., 2020. A strategic justification of the Talmud rule based on lower and upper bounds. *International Journal of Game Theory*, ISSN 0020-7276. DOI 10.1007/s00182-020-00727-z.

We follow the Nash program to provide a new strategic justification of the Talmud rule in bankruptcy problems. The design of our game is based on a focal axiomatization of the rule, which combines consistency with meaningful lower and upper bounds to all creditors. Our game actually considers bilateral negotiations, inspired by those bounds, which are extended to an arbitrary number of creditors, by means of consistency.

NABAVI, S.T., ALAVI, S.A., DIAZ-AZPIROZ, M., MOHAMMADI, S., GHASSEMI, M.R., FERNANDEZ, C., BARCOS, L. y FREHNER, M., 2020. Deformation mechanics in inclined, brittle-ductile transpression zones: Insights from 3D finite element modelling. *Journal of Structural Geology*, vol. 137, pp. 104082. ISSN 0191-8141. DOI 10.1016/j.jsg.2020.104082.

Most natural examples of transpression zones developed at oblique convergence regime are inherently 3D and have inclined boundaries. A 3D finite element model with an elasto-plastic rheology is used to investigate the structural and mechanical evolution of inclined transpression zones in a rock sequence above a frictional basal detachment. Inelastic constitutive relationships allow permanent strains to develop in response to the applied loads. FE-modelling results show that oblique convergence is accommodated by discrete deformation at the main pre-existing inclined faults (≈ 70 degrees) and by distributed brittle and ductile deformation at active blocks. Oblique contraction at the active blocks resulted mainly in layer-parallel shortening, orthogonal to the model outer boundaries, whereas thickening in the horizontal and vertical directions was accommodated via layer-parallel, fault strike-parallel extension and up-dip extrusion (i.e., inclined extrusion). Lateral extrusion should have compensated the rest and/or volume loss took place. Folding and thickening of the mobile backstop produced a non-cylindrical, asymmetric, bi-vergent anticline where permanent strains developed principally in the steep forelimb. Secondary, conjugate fault zones also accommodate oblique slip and contribute to uplift. Displacement vectors within the transpression zone are rotated counter-clockwise (ca. 20 degrees-30 degrees) with respect to vectors in the fixed backstop. Areas with higher rotation values seem to correlate with those showing higher ellipticity values. The presence of pre-existing faults favored strain partitioning from the onset of deformation. FE-modelling results compared with analytical, natural example, and analogue modelling results show

that our mechanical modelling can overall match inclined transpression zones geometry that present different modes of strain partitioning and localisation.

NARANJO-ORELLANA, J., FRANCISCO RUSO-ALVAREZ, J. y LUIS ROJO-ALVAREZ, J., 2020. Comparison of Omegawave Device and an Ambulatory ECG for RR Interval Measurement at rest. *International Journal of Sports Medicine*, ISSN 0172-4622. DOI 10.1055/a-1157-9220.

The aim of this study was to validate the measurements of the beat intervals taken at rest by the Omegawave (R) device by comparing them to an ambulatory electrocardiogram system. For this purpose, the electrocardiogram was digitally processed, time-aligned, and scrutinized for its suitable use as gold-standard. Rest measurements were made for 10 minutes on 5 different days to 10 men and 3 women (24.8 +/- 5.05 years; 71.82 +/- 11.02 kg; 174.35 +/- 9.13 cm). RR intervals were simultaneously recorded using the Omegawave device and a Holter electrocardiogram. The processing of Holter electrocardiogram signals included the detrending of baseline noise and a high-pass filtering for emphasizing the QRS complexes and attenuating the T waves. After obtaining the RR intervals from the electrocardiogram, those from the Omegawave device were automatically aligned to them with cross-correlation digital processing techniques and compared to check whether both measurements could be considered superimposable. A Bland-Altman analysis was applied to the 5 measurements made for all subjects. The Omegawave device exhibited very strong agreement with a qualitycontrolled Holter electrocardiogram. Deviations not exceeding 25 ms could be expected in 95 % of the cases, which is within manageable ranges both for clinical practice and for sports.

NIETO JIMENEZ, C., PARDOS MAINER, E., RUSO ÁLVAREZ, J. y NARANJO ORELLANA, J., 2020. Carga de entrenamiento y VFC en una atleta femenina: Estudio de caso. En: journalAbbreviation: Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte, *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte*, vol. 20, no. 78, pp. 321-333. ISSN 1577-0354. 10.15366/rimcafd2020.78.009

The purpose of this study was to describe a follow-up methodology in a female athlete who combines Ultra Trail Running (UTR) and Ironman during 16 weeks, using Heart Rate Variability (HRV). The daily training load (TL) was previously programmed and the weekly summation was recorded. The RR (ms) intervals at rest were recorded every morning for 5 minutes. The RMSSD (root mean square of the successive differences between adjacent RR intervals) was measured as an index of the parasympathetic activity and the stress score (SS) as a measure of sympathetic activity. Daily HRV morning records appear to be a useful way to monitor sympathetic-parasympathetic balance in athletes before tackling training sessions. This monitoring would serve to detect early fatigue states and to be able to monitor the planning of the loads.

OTERO-SABORIDO, F.M., VAZQUEZ-RAMOS, F.J., MANUEL CENIZO-BENJUMEA, J. y GONZALEZ-JURADO, J.A., 2020. Analysis of the assessment in Physical Education curricula in Primary Education. *Sport Education and Society*, ISSN 1357-3322. DOI 10.1080/13573322.2020.1804349.

One way to understand the Physical Education (PE) curriculum is through assessment. After the appearance in Spain of the learning standard (LS) as a reference for more specific assessment, the main objective of this work was to analyse the assessment aspects for PE in Primary Education in the curricula of Spain's 17 Autonomous Communities. Documentary analysis of the official regulations was used as a data collection technique. Qualitative and quantitative variables were analysed for the 3,357 assessment references. Qualitative variables included: LS typology and sequencing, and the existence of assessment orientations. Quantitative variables included: the curricular size, the presence of the cognitive, motor, and socio-affective dimensions in the different standards, percentages of comprehensiveness (assessment references which include the three dimensions) and curricular effectiveness (capacity of each curriculum to optimise the standards to include the greatest number of dimensions). The LS was the assessment element generally used by the majority of curricula. The cognitive dimension (39.42%) predominated in the assessment references, at the expense of the motor (30.94%) and socio-affective dimensions (29.65%). Only 11.70% of the 3,357 assessment references used incorporated the three dimensions (cognitive, motor and socio-affective). An inversely proportional relation seemed to exist between curricular size (number of standards) and its comprehensiveness ($r = -0.505$) and effectiveness (AEC) ($r = -0.646$). Likewise, it is noted that more LS including the motor dimension is associated with a greater comprehensiveness (2D: $r = 0.573$) of the curricula ($r = 0.721$). Lastly, the association between the «motor» and «cognitive» dimension variables was reversed. The curricula analysis showed a very high level of standardisation of PE assessment, which was oriented towards the measuring of theoretical know-how, foregoing comprehensiveness. This trend underlines the curricula's adopted neoliberal nature and their distancing from assessment models based on student participation and development. A more flexible, democratically constructed curriculum as well as assessment benchmarks are necessary in PE, where motor development and assessment become a means for holistic education.

PABLO SERRANO, A. de, 2020. El expolio de recursos naturales. De la green criminology a un nuevo y necesario derecho penal internacional del medio ambiente. En: journalAbbreviation: Revista General de Derecho Penal, *Revista General de Derecho Penal*, no. 33, pp. 5- 0. ISSN 1698-1189.

During the last decades, green criminology has been claiming for legal solutions to the great environmental threats we suffer because of our economical and industrial system. That modern model has a deep and irreversible impact on ecosystems. Scholars have recently researched on ecocide and geocide, on transnational environmental crimes, on historical pollution. In this paper we focus on the extractive industry carried out by transnational corporations acting with corrupted practices and causing great environmental impact. We propose a new international

crime: spoliation -or plunder- of natural resources. Finally, we discuss about the necessity of moving forward with the creation of an International Environmental Criminal Law, as the best way to protect the international environment.

PÁEZ-MALDONADO, J.A., REIGAL, R.E., MORILLO-BARO, J.P., CARRASCO-BELTRÁN, H., HERNÁNDEZ-MENDO, A. y MORALES-SÁNCHEZ, V., 2020. Physical fitness, selective attention and academic performance in a pre-adolescent sample. *International Journal of Environmental Research and Public Health*, vol. 17, no. 17, pp. 1-11. DOI 10.3390/ijerph17176216

The purpose of the current study is to analyze the relationships between physical fitness, selective attention, and academic performance in pre-teens. The sample here consists of 135 participants between the ages of 10 and 12 ($M = 11.05$; $SD = 0.61$), with 39.26% female ($n = 53$) and 60.74% male ($n = 82$) participants. Horizontal and vertical jump distances, speed, and cardio-respiratory fitness were evaluated to assess physical fitness. The d2 Test of Attention was used to evaluate selective attention. In addition, data were obtained regarding participant academic performance by analyzing the academic performance. The results show significant relationships between the measures analyzed, highlighting positive associations between physical fitness, cognitive functioning, and academic performance. Thus, participants who were fitter scored better on tests of attention ($Z_{133} = -4.07$; $p < 0.00007$, Cohen's $d = 0.75$, 95% CI (0.39, 1.11)) and concentration ($t_{133} = -3.84$; $p < 0.0007$, Cohen's $d = 0.69$, 95% CI (0.33, 1.05)), as well as having higher academic performance ($Z_{133} = -2.84$; $p < 0.0035$, Cohen's $d = 0.39$, 95% CI (0.04, 0.75)). Cardiorespiratory fitness was the measure of physical fitness that best explained these relationships. The results suggest that maintaining and improving the physical fitness of children and adolescents may help their brain function develop better. © 2020 by the authors. Licensee MDPI, Basel, Switzerland.

PALACIOS, I., VICENTE-CRESPO, M. y MARTIN-BERMUDO, M.D., 2020. The humble fruit fly is helping the African science community to thrive. *Nature Reviews Molecular Cell Biology*, ISSN 1471-0072. DOI 10.1038/s41580-020-00283-0.

Using the powerful model system *Drosophila melanogaster* (fruit fly), DrosAfrica is helping to create an interconnected community of biomedical scientists. DrosAfrica is now aiming at creating African institutes that will allow researchers to run impactful biomedical projects. For this, long term sustainable funding is urgently needed. How DrosAfrica is contributing to shaping research and promoting equality in science on the African continent using fruit flies.

PAREJA-BLANCO, F., ALCAZAR, J., CORNEJO-DAZA, P.J., SANCHEZ-VALDEPENAS, J., RODRIGUEZ-LOPEZ, C., HIDALGO-DE MORA, J., SANCHEZ-MORENO, M., BACHERO-MENA, B., ALEGRE, L.M. y

ORTEGA-BECERRA, M., 2020. Effects of velocity loss in the bench press exercise on strength gains, neuromuscular adaptations, and muscle hypertrophy. *Scandinavian Journal of Medicine & Science in Sports*, ISSN 0905-7188. DOI 10.1111/sms.13775.

Objective This study aimed to compare the effects of four velocity-based training (VBT) programs in bench press (BP) between a wide range of velocity loss (VL) thresholds-0% (VL0), 15% (VL15), 25% (VL25), and 50% (VL50)-on strength gains, neuromuscular adaptations, and muscle hypertrophy. **Methods** Sixty-four resistance-trained young men were randomly assigned into four groups (VL0, VL15, VL25, and VL50) that differed in the VL allowed in each set. Subjects followed a VBT program for 8-weeks using the BP exercise. Before and after the VBT program the following tests were performed: (a) cross-sectional area (CSA) measurements of pectoralis major (PM) muscle; (b) maximal isometric test; (c) progressive loading test; and (d) fatigue test. **Results** Significant group x time interactions were observed for CSA ($P < .01$) and peak root mean square in PM (peak RMS-PM, $P < .05$). VL50 showed significantly greater gains in CSA than VL0 ($P < .05$). Only the VL15 group showed significant increases in peak RMS-PM ($P < .01$). Moreover, only VL0 showed significant gains in the early rate of force development (RFD, $P = .05$), while VL25 and VL50 improved in the late RFD ($P \leq .01-.05$). No significant group x time interactions were found for any of the dynamic strength variables analyzed, although all groups showed significant improvements in all these parameters. **Conclusion** Higher VL thresholds allowed for a greater volume load which maximized muscle hypertrophy, whereas lower VL thresholds evoked positive neuromuscular-related adaptations. No significant differences were found between groups for strength gains, despite the wide differences in the total volume accumulated by each group.

PAREJA-BLANCO, F., ALCAZAR, J., SANCHEZ-VALDEPENAS, J., CORNEJO-DAZA, P.J., PIQUERAS-SANCHIZ, F., MORA-VELA, R., SANCHEZ-MORENO, M., BACHERO-MENA, B., ORTEGA-BECERRA, M. y ALEGRE, L.M., 2020. Velocity Loss as a Critical Variable Determining the Adaptations to Strength Training. *Medicine and Science in Sports and Exercise*, vol. 52, no. 8, pp. 1752-1762. ISSN 0195-9131. DOI 10.1249/MSS.0000000000002295.

Purpose This study aimed to compare the effects of four resistance training (RT) programs with different velocity loss (VL) thresholds: 0% (VL0), 10% (VL10), 20% (VL20), and 40% (VL40) on sprint and jump performance, muscle strength, neuromuscular, muscle hypertrophy, and architectural adaptations. **Methods** Sixty-four young resistance-trained men were randomly assigned into four groups (VL0, VL10, VL20, and VL40) that differed in the VL allowed in each set. Subjects followed an RT program for 8 wk (two sessions per week) using the full-squat (SQ) exercise, with similar relative intensity (70%-85% 1-repetition maximum), number of sets (3), and intersession recovery period (4 min). Before and after the RT program, the following tests were performed: 1) muscle hypertrophy and architecture of the vastus lateralis (V-LA), 2) tensiomyography, 3) 20-m running sprint, 4) vertical jump, 5) maximal voluntary isometric contraction in SQ, 6) progressive loading test in SQ, and 7) fatigue test. **Results** No between-

group differences existed for RT-induced gains in sprint, jump, and strength performance despite the differences in the total volume performed by each group. VL20 and VL40 showed significant increases ($P < 0.001$) in muscle hypertrophy (group-time interaction, $P = 0.06$). However, only VL40 exhibited a significant slowing ($P < 0.001$) of the delay time in the V(LA) muscle (group-time interaction, $P = 0.05$). Moreover, VL40 showed a significant decrease in the early rate of force development ($P = 0.04$). Conclusions Higher VL thresholds (i.e., VL20 and VL40) maximized hypertrophic adaptations, although an excessive VL during the set (i.e., VL40) may also induce negative neuromuscular adaptations. Therefore, moderate VL thresholds should be chosen to maximize strength adaptations and to prevent negative neuromuscular adaptations.

PÉREZ GONZÁLEZ, S.M. y CARLOS ARBOLEDA GOLDARACENA, J., 2020. Ocho siglos de franciscanismo: las mujeres en la Orden Franciscana durante la Edad Media. En: journalAbbreviation: Hispania sacra, *Hispania sacra*, vol. 72, no. 145, pp. 7-8. ISSN 0018-215X.

PÉREZ GONZÁLEZ, S.M. y SÁNCHEZ HERRERO, J., 2020. Los miembros femeninos de la Tercera Orden Franciscana en Andalucía a finales de la Edad Media. En: journalAbbreviation: Hispania sacra, *Hispania sacra*, vol. 72, no. 145, pp. 25-38. ISSN 0018-215X. 10.3989/hs.2020.002

This paper is focused on the study of the female members of the Third Franciscan Order who lived in Andalusia in the late Middle Ages. Firstly we try to specify the title of «Third Order» and its origin. In the second part we expose the existing communities, many of whom were forced to convert or to merge with a convent of nuns. Finally, we approach the study of tertiaries in particular, by deepening the different aspects of their daily living.

PRADAS GARCÍA, M., MACIÁ-ANDREU, M.J., GARCÍA-TASCÓN, M. y GALLARDO GUERRERO, A.M., 2020. Analysis of loyalty and future intentions of the users of the golf courses in Andalusia, Spain. En: journalAbbreviation: European Journal of Government and Economics, *European Journal of Government and Economics*, vol. 9, no. 2, pp. 181-199. ISSN 2254-7088. 10.17979/ejge.2020.9.2.5841

Spain is a European leader as a golf tourism destination, and Andalusia is the region that receives the most tourism in this sector, boosting not only the golf industry but also the percentage of income overall. Thus, user loyalty and knowing the future intentions of users is a matter of vital importance in these sports organizations. This study analyses 636 users of 17 golf courses in Andalusia –73.43% men and 26.42% women– and with an average age of 50.2 ± 15.6 . The results show that more than 70% of users would encourage their families to play on the golf course and recommend it in more than 75% of them. In conclusion, this study emphasises the need for the use of the adapted tool, as it is a valid and reliable instrument that guides on the aspects demanded by the user as well as how to build loyalty.

RAHMAN, M., RODRÍGUEZ-SERRANO, M.Á. y LAMBKIN, M., 2020. Advertising efficiency and profitability: Evidence from the pharmaceutical industry. *Industrial Marketing Management*, vol. 89, pp. 619-629. DOI 10.1016/j.indmarman.2019.02.001

B2B firms spend considerable sums of money on promotional activities to promote their products and to build brand equity. An increasing proportion of this spending is being devoted to direct to end-user (DTE) advertising in an effort to pull end-users towards their products as a complement to their push promotional activities. This is particularly true for US-based pharmaceutical firms following the deregulation of DTE advertising. This trend suggests the necessity to investigate how efficiently DTE advertising expenditure is being managed, and to ascertain whether the level of efficiency has any impact on profitability. This study examined the level of DTE advertising efficiency for a sample of US-based pharmaceutical firms and went on to investigate the impact of the efficiency level on firm profitability. The findings of the study demonstrate that DTE advertising efficiency does vary between firms and, furthermore, that the higher the level of efficiency, the better is firm profitability. These results are robust to alternative measures of firm profitability, specifically, return on assets (ROA), return on equity (ROE), gross profit margin (GPM) and net profit margin (NPM). © 2019

RAMIREZ, D., RIVEROS, G., DIAZ, P., VERDUGO, J., NUNEZ, G., LIZAMA, S., LAZO, P., DALCHIELE, E.A., GAU, D.L., MAROTTI, R.E., ANTA, J.A., CONTRERAS-BERNAL, L., RIQUELME, A. y IDIGORAS, J., 2020. Electrochemically Assisted Growth of CsPbBr₃-Based Solar Cells Without Selective Contacts. *Chemelectrochem*, ISSN 2196-0216. DOI 10.1002/celc.202000782.

In this work we report a simple and cost-effective CsPbBr₃-based solar cell without ordinary selective contacts. To do so we follow an electrochemical approach consisting of three successive steps: (1) electrodeposition of PbO(2) directly on top of FTO substrates, (2) heterogeneous phase reaction with gaseous HBr and (3) spin-coating of methanolic CsBr solutions followed by annealing. This method is more adequate for large-scale environmentally friendly production as it reduces chemical waste, particularly toxic lead. The resulting films were structurally and optically characterized showing good coverage of the FTO substrates, absence of defects such as pinholes and orthorhombic structure. Photovoltaic and impedance characterization was carried out by pressing a carbon coated metal spring onto the CsPbBr(3) film until obtaining maximized open-circuit potential (V-oc) and short-circuit photocurrent density (j(sc)) under simulated sunlight. The stabilized current at fixed voltage (SCFV) technique gave a maximum PCE value of 2.70 % close to devices with similar configuration. Impedance measurements demonstrated analogous behavior to that of state-of-art CsPbBr(3) based solar cells, comprising a recombination arc at mid-high frequencies, geometrical capacitance and ideality factors closed to 2, typical of SRH recombination in the perovskite bulk.

RAMOS PRIETO, J., 2020. El impuesto sobre transmisiones patrimoniales y actos jurídicos documentados: una reforma necesaria. En: journalAbbreviation: Reformas recientes y pendientes del sistema tributario español, *Reformas recientes y pendientes del sistema tributario español*. S.l.: Aranzadi Thomson Reuters, pp. 119-182. ISBN 978-84-13-09667-4.

RAYA-GONZALEZ, J., SUAREZ-ARRONES, L., NAVANDAR, A., BALSALOBRE-FERNANDEZ, C. y SAEZ DE VILLARREAL, E., 2020. Injury Profile of Elite Male Young Soccer Players in a Spanish Professional Soccer Club: A Prospective Study During 4 Consecutive Seasons. *Journal of Sport Rehabilitation*, vol. 29, no. 6, pp. 801-807. ISSN 1056-6716. DOI 10.1123/jsr.2019-0113.

Context: As the number of injuries in young soccer players increases, an epidemiological study is the first step in improving preventive strategies. Objectives: To analyze the injury profile of a Spanish professional soccer club's academy during 4 consecutive seasons and to examine the injury incidence across different chronological age groups. Design: Prospective cohort design. Setting: Aggregate injury and exposure data collected during 4 consecutive seasons. Participants: Three hundred nine elite male young soccer players. Main Outcomes Measures: Injuries that led to participation time missed from training and match play prospectively reported by medical or coaching staff of the club. Results: A total of 464 time-loss injuries were observed during this study period. The overall injury incidence was 2.93 injuries per 1000 hours, with higher incidence during matches than during training (10.16 vs 2.10 injuries/1000 h; rate ratio [RR] = 0.21; 95% confidence interval [CI], 0.17-0.25; $P < .05$), with the U14 age group presenting the lowest injury rate (2.39 injuries/1000 h; RR= 1.15-1.57; $P < .05$). In terms of injury severity, moderate injuries were the most frequent (1.42 injuries/1000 h). Muscle injuries were the most common type of injuries (57.7%; 2.75 injuries/1000 h; RR = 1.84-13.4; $P < .05$), and hamstrings (93/268) were the most affected muscle group (0.58 injuries/1000 h; RR = 1.58-2.91; $P < .05$). Injury incidence showed a seasonal variation as indicated by peaks in August and October. In matches, specifically, the match period between 75 and 90 minutes showed the highest injury incidence (10.29 injuries/1000 h; RR = 1.89-6.38; $P < .01$). Conclusions: The findings of this study suggest that specific preventive strategies must be implemented to try to reduce the injury incidence in Spanish elite young soccer players attending to the characteristics of each age group.

REBOLLO-ROMERO, I., FERNANDEZ-CRUZ, E., CARRASCO-GALAN, F., VALERO, E., CANTOS-VILLAR, E., CERESO, A.B., TRONCOSO, A.M. y GARCIA-PARRILLA, M.C., 2020. Factors influencing the production of the antioxidant hydroxytyrosol during alcoholic fermentation: Yeast strain, initial tyrosine concentration and initial must. *Lwt-Food Science and Technology*, vol. 130, pp. 109631. ISSN 0023-6438. DOI 10.1016/j.lwt.2020.109631.

Hydroxytyrosol is well known for its potent antioxidant activity and anticarcinogenic, antimicrobial, cardioprotective and neuroprotective properties. Main food sources

are olive oil (formed from the hydrolysis of oleuropein) and wine. One possible explanation to its origin in wines is the synthesis from tyrosol, which in turn is produced from the Ehrlich pathway by yeasts. This work aims to explore the factors that could increase the content as the strain of yeast, the initial tyrosine concentrations as precursor and the effect of synthetic and sterilized natural grape musts. Alcoholic fermentations in synthetic must showed that hydroxytyrosol is produced by all the yeast strains under study. Commercial *Saccharomyces cerevisiae* yeasts were those which produced higher concentrations, being the Red Fruit strain the biggest producer (6.12 ng/mL). Once the strain was selected, alcoholic fermentations were performed in synthetic must, with different tyrosine concentrations. The amount of hydroxytyrosol did not increase in a proportional way as tyrosine does. On the other hand, higher concentrations of hydroxytyrosol were obtained in natural grape musts (10.46 ng/mL) than in synthetic must (4.03 ng/mL). This work confirms the capacity of winemaking yeasts to produce the bioactive hydroxytyrosol.

RESTREPO, L.C., 2020. Sorcery as a resource for women in the Cartagena de Indias of the seventeenth century: A window to everyday conflicts. *Memorias*, no. 41, pp. 65-80. DOI 10.14482/MEMOR.41.200.92

The text analyzes the activity of enchanting women in the colonial society of Cartagena in the seventeenth century through erotic-loving spells preserved in the inquisitorial processes of the Court of the Holy Office preserved in the National Historical Archive of Spain. By analyzing these spells, the group of sorceresses can be defined as colonial subjects that had their own cultural identity as a result of the different immigrations to the city. The witchcraft activities carried out by these women reflect the status of women in the colonial society of Cartagena in the 17th century. His statements before the Inquisition reveal his daily activity, both private and public. Colonial society standardized love, sexuality, offspring within marriage leaving women in a precarious situation, especially if they were part of disadvantaged groups. Therefore, spells were a symbolic weapon of women to seek love, enjoyment of sexuality (inside and outside marriage) and, above all, economic security. © 2020 Universidad del Norte. All rights reserved.

REYES-MARTINEZ, M.J., MARTINEZ-PITA, I., SOLER-NAVARRO, D. y GARCIA-GARCIA, F.J., 2020. The impact of salinity changes associated with size on the wedge clam *Donax trunculus* Linnaeus, 1758 (Mollusca: Bivalvia): A laboratory assay. *Estuarine Coastal and Shelf Science*, vol. 241, pp. 106838. ISSN 0272-7714. DOI 10.1016/j.ecss.2020.106838.

Temperate zones have undergone intense rainfall in recent years, which may induce alterations in the salinity of estuarine and coastal areas and consequently on benthic communities. *Donax trunculus* Linnaeus, 1758, is a component of the macrofauna in shallow areas of sandy beaches and, because of its economic value, one of the most exploited clams. The sensitivity of *D. trunculus* to salinity changes and differences related to size were tested in this study. Adults and juveniles of *D. trunculus* were exposed to different salinity treatments and mortality was registered every 12 h during 21 days. In general, salinities below 14.2 were lethal

to both populations, whereas the survival rate was 100% in salinities equal to or above 26.7. Differences in survival rates between the two size classes were detected, especially at intermediate salinities, where juvenile survival was higher. Median lethal salinity (LC50) was similar for both groups, although in juveniles the values were lower, whereas the median lethal time (LT50) values were higher in young clams. Therefore, the results of this study suggest that *D. trunculus* is a euryhaline species whose tolerance to low salinities varies between size classes. Juveniles resist lower salinities than adults, and can withstand sudden changes in salinity over a longer period.

RIBERA, P., ORDOÑEZ, P., GALLEGO, D. y PEÑA-ORTIZ, C., 2020. Internal variability and external forcings in the ocean–atmosphere multidecadal oscillator over the North Atlantic. *Climate Dynamics*, vol. 55, no. 3-4, pp. 909-923. DOI 10.1007/s00382-020-05300-8

In this paper, we generalize the concept of “external forcing” to include any mechanism that modulates the long-term evolution of a meteorological variable but is not directly related to the internal variability of the climate system. Applying this concept, the corresponding ‘external forcings’ are removed from several long record datasets of oceanic and atmospheric variables at the surface in the North Atlantic. We perform a multivariate analysis in the frequency domain over both the original data fields and the new ‘internal variability’ fields. This multivariate analysis is based on a MultiTaper Method-Singular Value Decomposition (MTM-SVD). It is noteworthy that, after the removal of the external forcings, there is an almost perfect alignment of the main multidecadal oscillatory band ($f = 0.21$ cycles/decade) with all the spectra of the analysed fields. This alignment was not observed before the external forcings were removed. Particularly striking is the case of the sea level pressure (SLP), which shows a notable variation in its oscillation period despite the fact that this variable has traditionally been considered to be unaffected, at global scale, by any external forcing. The external forcing in the SLP records is very probably caused by the scarcity of the observed data during the first hundred years of the record (most evident, during the earliest decades), by the spatial distribution of those observations and, possibly, by the assimilation model employed to build those long record datasets. When we analysed the relationship between the ocean and the atmosphere using this approach, we found strong evidence of a cyclic behaviour in which oceanic conditions modulate the atmospheric variability, with a lead time of up to about 10 years. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

RODRÍGUEZ HERNÁNDEZ, A.J. y DÍAZ-ORDÓÑEZ, M., 2020. Aristocracia y ejército a mediados del siglo XVII: el papel intermediario de la nobleza en el reclutamiento durante la crisis de 1658-59. En: journalAbbreviation: *Tiempos modernos: Revista Electrónica de Historia Moderna*, *Tiempos modernos: Revista Electrónica de Historia Moderna*, vol. 10, no. 40, pp. 315-339. ISSN 1699-7778.

The purpose of this paper is to analyze the role of the aristocracy within the recruitment crisis suffered by the Hispanic Monarchy during the second half of the 17th

century. In order to do so, we have resorted to the important archive sources that are conserved, both at a national and local level. With them we have been able to reconstruct the role of the nobility in a specific levy. At a time of crisis, the monarchy used a new formula, resorting to aristocracy to manage the enlistment of volunteers in charge of the Royal Treasury in different districts, turning the nobles into occasional managers of recruitment, a formula very different from the traditional one.

RODRIGUEZ-ROSELL, D., YANEZ-GARCIA, J.M., MORA-CUSTODIO, R., PAREJA-BLANCO, F., RAVELO-GARCIA, A.G., RIBAS-SERNA, J. y GONZALEZ-BADILLO, J.J., 2020. Velocity-based resistance training: impact of velocity loss in the set on neuromuscular performance and hormonal response. *Applied Physiology Nutrition and Metabolism*, vol. 45, no. 8, pp. 817-828. ISSN 1715-5312. DOI 10.1139/apnm-2019-0829.

This study aimed to compare the effects of 2 resistance training (RT) programs with different velocity losses (VLs) allowed in each set: 10% (VL10%) versus 30% (VL30%) on neuromuscular performance and hormonal response. Twenty-five young healthy males were randomly assigned into 2 groups: VL10% (n = 12) or VL30% (n = 13). Subjects followed a velocity-based RT program for 8 weeks (2 sessions per week) using only the full-squat (SQ) exercise at 70%-85% 1-repetition maximum (1RM). Repetition velocity was recorded in all training sessions. A 20-m running sprint, countermovement jump (CMJ), 1RM, muscle endurance, and electromyogram (EMG) during SQ exercise and resting hormonal concentrations were assessed before and after the RT program. Both groups showed similar improvements in muscle strength and endurance variables (VL10%: 7.0%-74.8%; VL30%: 4.2%-73.2%). The VL10% resulted in greater percentage increments in CMJ (9.2% vs. 5.4%) and sprint performance (-1.5% vs. 0.4%) than VL30%, despite VL10% performing less than half of the repetitions than VL30% during RT. In addition, only VL10% showed slight increments in EMG variables, whereas no significant changes in resting hormonal concentrations were observed. Therefore, our results suggest that velocity losses in the set as low as 10% are enough to achieve significant improvements in neuromuscular performance, which means greater efficiency during RT. Novelty The VL10% group showed similar or even greater percentage of changes in physical performance compared with VL30%. No significant changes in resting hormonal concentrations were observed for any training group. Curvilinear relationships between percentage VL in the set and changes in strength and CMJ performance were observed.

SANCHIS-PEDREGOSA, C., BERENGUER, E., ALBORT-MORANT, G. y ANTON SANZ, J., 2020. Guaranteed Crowdfunding Loans: A Tool for Entrepreneurial Finance Ecosystem Sustainability. *Amfiteatru Economic*, vol. 22, no. 55, pp. 775-791. ISSN 1582-9146. DOI 10.24818/EA/2020/55/775.

Crowdfunding is a disruptive financial tool that has been increasingly requested by SME's to cover their capital needs. However, the growth of this technological development is being limited by the existing risk of default resulting in loss for

lenders. To deal with this, funding platforms have started to offer more sustainable products such as the guaranteed loans. These special loans are backed by a Mutual Fund so Lenders minimise the risk of suffering the consequences of a default. This study aims to investigate the importance of factors related to loan characteristics, investor type and borrower's characteristics, in the crowdlending campaign success. To perform the analysis, we use Partial Least Squares (PLS) technique over a sample of 196 guaranteed loans from the pioneer platform in Spain offering that type of loans (MytripleA). Results indicate that the characteristics with greater influence in guaranteed crowdlending success are those related to the investors and the loans, while SME's factors seem not to have any impact. We consider that our results are interesting for both the funding platforms and the SME's seeking for funds.

SANTANA, M. y PASAMAR, S., 2020. Mapeo de la investigación en la gestión internacional de los recursos humanos. En: journalAbbreviation: Revista de Estudios Empresariales. Segunda época, *Revista de Estudios Empresariales. Segunda época*, no. 1, pp. 91-112. ISSN 1988-9046. 10.17561//ree.v2020n1.7

Despite the interest in International Human Resource Management (IHRM) in recent years, several issues still need to be addressed to provide clarity and conceptual understanding. This article aims to offer a systematic review of the literature on IHRM, highlighting the main themes and trends observed in this field. The study offers a critical evaluation, deepening the comprehension of IHRM, and identifying the most promising future lines of research. A scientific mapping analysis based on co-word networks of the literature was developed, using the SciMAT bibliometric tool. Three steps were followed: first, research themes were detected; second, the research themes and thematic networks were visualised; and third, the contributions made by the research topics were measured by performance analysis. One thousand seven hundred and seven published documents between 1974 and 2020 were retrieved from the Web of Science. In the last period (2015-2020) the driving themes are cross-cultural adjustment, multinationals, global careers and cross-cultural management. Job satisfaction is a specialised issue, while China is a transversal issue. Global talent management, women in the international context and diversity are emerging themes. This analysis will help inform researchers, professionals and public administrations about the importance of IHRM.

SANTOS-ROLDÁN, L., CANALEJO, A.M.C., BERBEL-PINEDA, J.M. y PALACIOS-FLORENCIO, B., 2020. Sustainable tourism as a source of healthy tourism. *International Journal of Environmental Research and Public Health*, vol. 17, no. 15, pp. 1-15. DOI 10.3390/ijerph17155353

Even though the World Tourism Organization described Sustainable Tourism as a tourism form that could contribute to the future survival of the industry, the current reality is quite different, since it has not been firmly established in society at expected levels. The present study analyzes which variables drive the consumption of this tourism type, taking tourist awareness as the key element. To this awareness, we must add the current crisis experienced by the tourism industry

caused by COVID-19, since it can benefit Sustainable Tourism development, promoting less crowded destinations that favor social distancing. For this, the existing literature on Sustainable Tourism has been examined in order to create a model that highlights the relations among these variables. To determine the meaning of these relations, a sample of 308 tourists was analyzed through structural equation models using Partial Least Squares. The results show that there is a clear attitude on the part of the tourist to develop Sustainable Tourism, driven by the positive effects and motivation it entails, as well as the satisfaction the tourist perceives when consuming a responsible tourism type. © 2020 by the authors. Licensee MDPI, Basel, Switzerland.

SERRATO CALERO, M. de las M., DELGADO-VAZQUEZ, A.M. y DIAZ JIMENEZ, R.M., 2020. Systematized Review and Meta-synthesis of the Sterilization of Women with Disabilities in the Field of Social Science: from Macro Eugenics to Microeugenics. *Sexuality Research and Social Policy*, ISSN 1868-9884. DOI 10.1007/s13178-020-00488-0.

Background The forced sterilization of women with disabilities has been a common practice throughout the world, hindering the sexual and reproductive freedom of a significant part of the female population. **Methods** In this paper, carried out between 2018 and 2019, we will perform a systematized review of this phenomenon in order to find out the scientific contributions on this matter in the field of Social Science, explore whether this practice is linked to one or more forms of violence, and analyze whether it is identified with specific disability typologies. For that purpose, we performed searches on three different bibliographic databases: Social Work s, Sociological s, and Social Services s, focusing on the disciplinary origin of the analysis. The research focusing on the forced sterilization of women with disabilities was selected, while those pertaining to other groups subjected to involuntary sterilization were ignored. After an evaluation phase, we obtained 98 research papers that were then subjected to the synthesis and analysis phases, following the SALSA Framework review methodology. **Results** The main findings indicate that on how the macroeugenics carried out during the nineteenth century has continued up until today as microeugenics, setting up the required situation for the continuation of forced sterilization. **Conclusions** This and other results provided significant data about the state of the matter in the field of Social Sciences, establishing the basis to organize further research about a phenomenon that has still not been sufficiently studied.

SORIANO GONZÁLEZ, M.L., 2020. La influencia de Maquiavelo en los neoconservadores americanos. Coincidencias y discrepancias. En: journalAbbreviation: Revista de derecho político, *Revista de derecho político*, no. 108, pp. 195-218. ISSN 0211-979X. 10.5944/rdp.108.2020.27999

Abstract: This article refers to an issue pending: the systematic comparison, point by point, of the ideas about the law and policy of Machiavelli, representative of the Renaissance political theory, and the American neo-conservatives. Despite the

separation of several centuries, there are great similarities between the Florentine author of the transition from the 15th century to the 16th and American neoconservatives of the 21th century. The methodology followed is the comparative analysis of the ideas of the Florentine author and the neoconservatives in each of sections of the work. The relevant conclusion is that the ideas of Machiavelli on political wisdom, especially the ability of prediction and resolution of future political events, is not present in the neoconservatives, in this regard forgetful disciples of the Florentine master, while there is a great coincidence in moral relativism, relationship of virtue and fortune, history as method and citizen militia.

TINTE-BAEZA, S., LÁZARO-NAVAS IRENE, PECOS-MARTÍN, D., LORENZO-MUÑOZ, A. y GALLEGU-IZQUIERDO, T., 2020. Response of the central and autonomous nervous system in relation to cervical vs dorsal manipulation: Pilot study. *Cuestiones de Fisioterapia*, vol. 49, no. 2, pp. 129-138

Introduction: vertebral manipulation is used to address vertebral problems such as movement restriction and pain. The conductance of the skin reflects the effect of vertebral manipulation, regarding pain and mechanosensitivity. Objectives: to measure changes in skin conductance and pressure pain threshold after cervical-dorsal manipulation, as well as changes in pressure pain threshold in remote area tissues with respect to the manipulation technique. Material and method: randomized pilot clinical trial with masking of the evaluator (n = 16), with two groups. In one, a vertebral manipulation of the cervical spine was performed and in the other of the dorsal spine. Pre-post manipulation measures were taken for pain and skin conductance, using algometry at the local and distal levels, and a biofeedback team, respectively. Results: significant differences were found between the pre and post variables for the region-PPT in both, dorsal (p < 0.05) and cervical (p < 0.001) mobilization groups, as well as for tibial-PPT variable in both, dorsal (p < 0.05) and cervical mobilization group (p < 0.001). The mixed linear model showed significance between the time within each group (F2.11,34.88 = 28,077; p < 0.001) with a large effect size ($\eta^2 = 0.63$). Conclusions: the application of impulse manipulation on the spine seems to cause a hypoalgesic effect at the local and distal level, being more effective if performed at the cervical level; in addition, to an increase in skin conductance. © 2020 Sociedad Andaluza de Fisioterapia. SOFIA. All rights reserved

VANHAEREN, T., DIVINA, F., GARCÍA-TORRES, M., GÓMEZ-VELA, F., VANHOOF, W. y GARCÍA, P.M.M., 2020. A comparative study of supervised machine learning algorithms for the prediction of long-range chromatin interactions. *Genes*, vol. 11, no. 9, pp. 1-17. DOI 10.3390/genes11090985

The role of three-dimensional genome organization as a critical regulator of gene expression has become increasingly clear over the last decade. Most of our understanding of this association comes from the study of long range chromatin interaction maps provided by Chromatin Conformation Capture-based techniques, which have greatly improved in recent years. Since these procedures are experimentally laborious and expensive, in silico prediction has emerged as an alternative strategy to generate virtual maps in cell types and conditions for

which experimental data of chromatin interactions is not available. Several methods have been based on predictive models trained on one-dimensional (1D) sequencing features, yielding promising results. However, different approaches vary both in the way they model chromatin interactions and in the machine learning-based strategy they rely on, making it challenging to carry out performance comparison of existing methods. In this study, we use publicly available 1D sequencing signals to model cohesin-mediated chromatin interactions in two human cell lines and evaluate the prediction performance of six popular machine learning algorithms: decision trees, random forests, gradient boosting, support vector machines, multi-layer perceptron and deep learning. Our approach accurately predicts long-range interactions and reveals that gradient boosting significantly outperforms the other five methods, yielding accuracies of about 95%. We show that chromatin features in close genomic proximity to the anchors cover most of the predictive information, as has been previously reported. Moreover, we demonstrate that gradient boosting models trained with different subsets of chromatin features, unlike the other methods tested, are able to produce accurate predictions. In this regard, and besides architectural proteins, transcription factors are shown to be highly informative. Our study provides a framework for the systematic prediction of long-range chromatin interactions, identifies gradient boosting as the best suited algorithm for this task and highlights cell-type specific binding of transcription factors at the anchors as important determinants of chromatin wiring mediated by cohesin. © 2020 by the authors. Licensee MDPI, Basel, Switzerland.

VELA SÁNCHEZ, A.J., 2020. Violencia de género sobre la pareja y pensión compensatoria. En: journalAbbreviation: Diario La Ley, *Diario La Ley*, no. 9684, pp. 1- 0. ISSN 1989-6913.

Aunque conforme al artículo 97 CC, el derecho a pensión compensatoria parece ser independiente de la culpabilidad del cónyuge acreedor en la crisis matrimonial, debe tenerse muy presente la indiscutible descalificación moral en la que aquél incurre, sobre todo, en el caso de violencia de género sobre la pareja, y que puede —debe— influir en el juez al conceder —negar— la correspondiente compensación.

WU, F., DE BOER, R., KRIKKEN, A.M., AKŞIT, A., BORDIN, N., DEVOS, D.P. y VAN DER KLEI, I.J., 2020. Pex24 and Pex32 are required to tether peroxisomes to the ER for organelle biogenesis, positioning and segregation in yeast. *Journal of cell science*, vol. 133, no. 16. DOI 10.1242/jcs.246983

The yeast *Hansenula polymorpha* contains four members of the Pex23 family of peroxins, which characteristically contain a DysF domain. Here we show that all four *H. polymorpha* Pex23 family proteins localize to the endoplasmic reticulum (ER). Pex24 and Pex32, but not Pex23 and Pex29, predominantly accumulate at peroxisome-ER contacts. Upon deletion of PEX24 or PEX32 - and to a much lesser extent, of PEX23 or PEX29 - peroxisome-ER contacts are lost, concomitant with defects in peroxisomal matrix protein import, membrane growth, and organelle proliferation, positioning and segregation. These defects are suppressed

by the introduction of an artificial peroxisome-ER tether, indicating that Pex24 and Pex32 contribute to tethering of peroxisomes to the ER. Accumulation of Pex32 at these contact sites is lost in cells lacking the peroxisomal membrane protein Pex11, in conjunction with disruption of the contacts. This indicates that Pex11 contributes to Pex32-dependent peroxisome-ER contact formation. The absence of Pex32 has no major effect on pre-peroxisomal vesicles that occur in *pex3 atg1* deletion cells. © 2020. Published by The Company of Biologists Ltd.

ZAPATA MOYA, A.R. y NAVARRO YANEZ, C.J., 2020. Urban regeneration policies and mental health in a context of economic crisis in Andalusia (Spain). *Journal of Housing and the Built Environment*, ISSN 1566-4910. DOI 10.1007/s10901-020-09774-0.

Literature suggests that urban regeneration policies might contribute towards improving mental health of residents, but to date there is a lack of empirical research on how these policies and downward social mobility can interact and influence health outcomes. The current study aims to explicitly test whether regeneration policies implemented in deprived Andalusian urban places (southern Spain) moderate the use of anxiolytics and/or antidepressants, taking into consideration families' downward social mobility during the recent period of economic crisis in Spain. We designed a post intervention survey to retrospectively compare the evolution of psychotropic drug consumption in target and comparison areas. We observe a general increase in the use of anxiolytics and/or antidepressants from 2008 to 2015, specifically for people in whose families the economic crisis had the greatest impact (odds ratio = 2.18;pvalue < 0.001). However, better evolution is observed among residents of the target areas compared with residents of similar urban areas where this kind of polices have been not in force (odds ratio = 0.50;pvalue < 0.05). Therefore, urban regeneration policies might act as moderators of the risk of mental health, particularly when people are subject to the loss of individual/family resources in urban vulnerable contexts.

