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Servicio de Apoyo a la Investigación

Sevilla, junio de 2021

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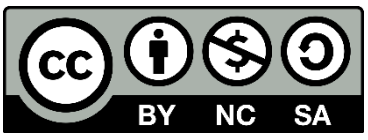

Metodología

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.

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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

Scopus

Estrategia de búsqueda avanzada:

((AF-ID ("CSIC-JA-UPO-USE - Centro Andaluz de Biologia 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 (LIMITTO (PUBYEAR , 2021))

Dialnet

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Fecha de recolección de datos:

Dialnet: 08/06/2021
Web of Science y Scopus: 09/06/2021

Publicaciones

AGABO-GARCÍA, C., CALDERÓN, N. y HODAIFA, G., 2021. Heterogeneous Photo-Fenton Reaction for Olive Mill Wastewater Treatment-Case of Reusable Catalyst. *Catalysts*, vol. 11, no. 5, pp. 557. DOI 10.3390/catal11050557.

Heterogeneous catalysts can be an efficient and economical option for olive mill wastewater (OMW) treatment by an advanced oxidation process if they could be reused. In this work, OMW was treated using a heterogeneous photo-Fenton reaction (artificial ultraviolet light/H2O2/HFeO2). For this purpose, different concentrations of HFeO2 were tested: 0.04; 0.3; 0.8; 5.0; 10.0; 20.0; 30.0, and 50.0 g/L. The following operational conditions were chosen: pH = 3.0, temperature = 20 degrees C, agitation rate = 700 rpm. The experimental results showed high removal percentages of the main OMW characterization parameters at 50 g/L of HFeO2: %CODremoval = 62.8%; %total phenolic compounds (TPCs) = 88.9%. tese results were also compared with those of other control oxidation systems, i.e., UV, H2O2, and UV/H2O2, which provided 35.5 and 56.1%; 46.2 and 74.0%; 48.0 and 76.8% removal, respectively. In addition, the catalyst was reused three times, recovering more than 90.5% of it.

AGENJO-CALDERÓN, A., 2021. Genealogía del pensamiento económico feminista: las mujeres como sujeto epistemológico y como objeto de estudio en economía. *Revista de estudios sociales*, no. 75, pp. 42-54. ISSN 0123-885X. 10.7440/res75.2021.05

Este trabajo plantea una revisión y sistematización de investigaciones feministas centradas en visibilizar “el otro oculto feminizado” en el discurso económico androcéntrico. Para ello, se realiza un recorrido por la historia del pensamiento económico occidental (desde la Antigüedad hasta el enfoque neoclásico del siglo XX) y por la historia económica. Se busca recuperar a las mujeres como objeto de estudio, prestando especial atención al ámbito privado/doméstico, y también como sujetos epistemológicos al visibilizar los aportes y críticas de mujeres economistas silenciadas en la historia. Se ahondará en ambas áreas de conocimiento de forma interrelacionada, con el fin de buscar espacios de confluencia con los desarrollos de la economía feminista y de aportar en la construcción de la genealogía de esta corriente de pensamiento.

ALCARAZ RODRÍGUEZ, V. y MUÑOZ LLERENA, A., 2021. Formación del profesorado de Educación Física en inclusión educativa: revisión sistemática. *Nuevos escenarios educativos: hacia el Horizonte 2030*. S.l.: Dykinson, pp. 382-390. ISSN 978-84-1377-360-5.

ALCÁZAR-FABRA, M., RODRÍGUEZ-SÁNCHEZ, F., TREVISSON, E. y BREA-CALVO, G., 2021. Primary Coenzyme Q deficiencies: A literature review and online platform of clinical features to uncover genotype-phenotype correlations. *Free Radical Biology and Medicine*, vol. 167, pp. 141-180. ISSN 0891-5849. DOI 10.1016/j.freeradbiomed.2021.02.046.

Primary Coenzyme Q (CoQ) deficiencies are clinically heterogeneous conditions and lack clear genotypephenotype correlations, complicating diagnosis and prognostic assessment. Here we present a compilation of all the symptoms and patients with primary CoQ deficiency described in the literature so far and analyse the most common clinical manifestations associated with pathogenic variants identified in the different COQ genes. In addition, we identified new associations between the age of onset of symptoms and different pathogenic variants, which could help to a better diagnosis and guided treatment. To make these results useable for clinicians, we created an online platform (https://coenzymeQbiology.github. io/clinic-CoQ-deficiency) about clinical manifestations of primary CoQ deficiency that will be periodically updated to incorporate new information published in the literature. Since CoQ primary deficiency is a rare disease, the available data are still limited, but as new patients are added over time, this tool could become a key resource for a more efficient diagnosis of this pathology.

ÁLVAREZ-CÓRDOBA, M., TALAVERON-REY, M., VILLALÓN-GARCÍA, I., POVEA-CABELLO, S., SUÁREZ-RIVERO, J.M., SUÁREZ-CARRILLO, A., MUNUERA-CABEZA, M., SALAS, J.J. y SÁNCHEZ-ÁLCAZAR, J.A., 2021. Down regulation of the expression of mitochondrial phosphopantetheinyl-proteins in pantothenate kinase-associated neurodegeneration: pathophysiological consequences and therapeutic perspectives. *Orphanet Journal of Rare Diseases*, vol. 16, no. 1, pp. 201. DOI 10.1186/s13023-021-01823-3.

Background Neurodegeneration with brain iron accumulation (NBIA) is a group of genetic neurological disorders frequently associated with iron accumulation in the basal nuclei of the brain characterized by progressive spasticity, dystonia, muscle rigidity, neuropsychiatric symptoms, and retinal degeneration or optic nerve atrophy. Pantothenate kinase-associated neurodegeneration (PKAN) is the most widespread NBIA disorder. It is caused by mutations in the gene of pantothenate kinase 2 (PANK2) which catalyzes the first reaction of coenzyme A (CoA) biosynthesis. Thus, altered PANK2 activity is expected to induce CoA deficiency as well as low levels of essential metabolic intermediates such as 4 '-phosphopantetheine which is a necessary cofactor for critical proteins involved in cytosolic and mitochondrial pathways such as fatty acid biosynthesis, mitochondrial respiratory complex I assembly and lysine and tetrahydrofolate metabolism, among other metabolic processes. Methods In this manuscript, we examined the effect of PANK2 mutations on the expression levels of proteins with phosphopantetheine cofactors in fibroblast derived from PKAN patients. These proteins include cytosolic acyl carrier protein (ACP), which is integrated within the multifunctional polypeptide chain of the fatty acid synthase involved in cytosolic fatty acid biosynthesis type I (FASI); mitochondrial ACP (mtACP) associated with mitocondrial fatty acid biosynthesis type II (FASII); mitochondrial alpha-aminoadipic semialdehyde synthase (AASS); and 10-

formyltetrahydrofolate dehydrogenases (cytosolic, ALD1L1, and mitochondrial, ALD1L2). Results In PKAN fibroblasts the expression levels of cytosolic FAS and ALD1L1 were not affected while the expression levels of mtACP, AASS and ALD1L2 were markedly reduced, suggesting that 4 '-phosphopantetheinylation of mitochondrial but no cytosolic proteins were markedly affected in PKAN patients. Furthermore, the correction of PANK2 expression levels by treatment with pantothenate in selected mutations with residual enzyme content was able to correct the expression levels of mitochondrial phosphopantetheinyl-proteins and restore the affected pathways. The positive effects of pantothenate in particular mutations were also corroborated in induced neurons obtained by direct reprograming of mutant PANK2 fibroblasts. Conclusions Our results suggest that the expression levels of mitochondrial phosphopantetheinyl-proteins are severely reduced in PKAN cells and that in selected mutations pantothenate increases the expression levels of both PANK2 and mitochondrial phosphopantetheinyl-proteins associated with remarkable improvement of cell pathophysiology.

AMARO-MELLADO, J.L., MELGAR-GARCÍA, L., RUBIO-ESCUDERO, C. y GUTIÉRREZ-AVILÉS, D., 2021. Generating a seismogenic source zone model for the Pyrenees: A GIS-assisted triclustering approach. *Computers & Geosciences*, vol. 150, pp. 104736. ISSN 0098-3004. DOI 10.1016/j.cageo.2021.104736.

Seismogenic source zone models, including the delineation and the characterization, still have a role to play in seismic hazard calculations, particularly in regions with moderate or low to moderate seismicity. Seismic source zones establish areas with common tectonic and seismic characteristics, described by a unique magnitude-frequency distribution. Their definition can be addressed from different views. Traditionally, the source zones have been geographically outlined from seismotectonic, geological structures, and earthquake catalogs. Geographic information systems (GIS) can be of great help in their definition, as they deal rigorously and less ambiguously with the available geographical data. Moreover, novel computer science approaches are now being employed in their definition. The Pyrenees mountain range - in southwest Europe - is located in a region characterized by low to moderate seismicity. In this study, a method based purely on seismic catalogs, managed with a GIS and a triclustering algorithm, were used to delineate seismogenic zones in the Pyrenees. Based on an updated, reviewed, declustered, extensive, and homogeneous earthquake catalog (including detailed information about each event such as date and time, hypocentral location, and size), a triclustering algorithm has been applied to generate the seismogenic zones. The method seeks seismicity patterns in a quasi-objective manner following an initial assessment as to the best suited seismic parameters. The eight zones identified as part of this study are represented on maps to be analyzed, being the zone covered by the Arudy-Arette region to Bagneres de Bigorre as the one with the highest seismic hazard potential.

ANTOJA, T., MCMILLAN, P.J., KORDOPATIS, G., RAMOS, P., HELMI, A., BALBINOT, E., CANTAT-GAUDIN, T., CHEMIN, L., FIGUERAS, F., JORDI, C., KHANNA, S., ROMERO-GÓMEZ, M., SEABROKE, G.M., BROWN, A.G.A., VALLENARI, A., PRUSTI, T., DE BRUIJNE, J.H.J., BABUSIAUX, C., BIERMANN, M., CREEVEY, O.L., EVANS, D.W., EYER, L., HUTTON, A., JANSEN, F., KLIONER, S.A., LAMMERS, U., LINDEGREN, L., LURI, X., MIGNARD, F., PANEM, C., POURBAIX, D., RANDICH, S., SARTORETTI, P., SOUBIRAN, C., WALTON, N.A., ARENOU, F., BAILER-JONES, C.A.L., BASTIAN, U., CROPPER, M., DRIMMEL, R., KATZ, D., LATTANZI, M.G., VAN LEEUWEN, F., BAKKER, J., CASTAÑEDA, J., DE ANGELI, F., DUCOURANT, C., FABRICIUS, C., FOUESNEAU, M., FRÉMAT, Y., GUERRA, R., GUERRIER, A., GUIRAUD, J., JEAN-ANTOINE PICCOLO, A., MASANA, E., MESSINEO, R., MOWLAVI, N., NICOLAS, C., NIENARTOWICZ, K., PAILLER, F., PANUZZO, P., RICLET, F., ROUX, W., SORDO, R., TANGA, P., THÉVENIN, F., GRACIA-ABRIL, G., PORTELL, J., TEYSSIER, D., ALTMANN, M., ANDRAE, R., BELLAS-VELIDIS, I., BENSON, K., BERTHIER, J., BLOMME, R., BRUGALETTA, E., BURGESS, P.W., BUSSO, G., CARRY, B., CELLINO, A., CHEEK, N., CLEMENTINI, G., DAMERDJI, Y., DAVIDSON, M., DELCHAMBRE, L., DELL'ORO, A., FERNÁNDEZ-HERNÁNDEZ, J., GALLUCCIO, L., GARCÍA-LARIO, P., GARCIA-REINALDOS, M., GONZÁLEZ-NÚÑEZ, J., GOSSET, E., HAIGRON, R., HALBWACHS, J.-L., HAMBLY, N.C., HARRISON, D.L., HATZIDIMITRIOU, D., HEITER, U., HERNÁNDEZ, J., HESTROFFER, D., HODGKIN, S.T., HOLL, B., JANSSEN, K., JEVARDAT DE FOMBELLE, G., JORDAN, S., KRONE-MARTINS, A., LANZAFAME, A.C., LÖFFLER, W., LORCA, A., MANTEIGA, M., MARCHAL, O., MARRESE, P.M., MOITINHO, A., MORA, A., MUINONEN, K., OSBORNE, P., PANCINO, E., PAUWELS, T., RECIO-BLANCO, A., RICHARDS, P.J., RIELLO, M., RIMOLDINI, L., ROBIN, A.C., ROEGIERS, T., RYBIZKI, J., SARRO, L.M., SIOPIS, C., SMITH, M., SOZZETTI, A., ULLA, A., UTRILLA, E., VAN LEEUWEN, M., VAN REEVEN, W., ABBAS, U., ABREU ARAMBURU, A., ACCART, S., AERTS, C., AGUADO, J.J., AJAJ, M., ALTAVILLA, G., ÁLVAREZ, M.A., ÁLVAREZ CID-FUENTES, J., ALVES, J., ANDERSON, R.I., VARELA, E.A., AUDARD, M., BAINES, D., BAKER, S.G., BALAGUER-NÚÑEZ, L., BALOG, Z., BARACHE, C., BARBATO, D., BARROS, M., BARSTOW, M.A., BARTOLOMÉ, S., BASSILANA, J.-L., BAUCHET, N., BAUDESSON-STELLA, A., BECCIANI, U., BELLAZZINI, M., BERNET, M., BERTONE, S., BIANCHI, L., BLANCO-CUARESMA, S., BOCH, T., BOMBRUN, A., BOSSINI, D., BOUQUILLON, S., BRAGAGLIA, A., BRAMANTE, L., BREEDT, E., BRESSAN, A., BROUILLET, N., BUCCIARELLI, B., BURLACU, A., BUSONERO, D., BUTKEVICH, A.G., BUZZI, R., CAFFAU, E., CANCELLIERE, R., CÁNOVAS, H., CARBALLO, R., CARLUCCI, T., CARNERERO, M.I., CARRASCO, J.M., CASAMIQUELA, L., CASTELLANI, M., CASTRO-GINARD, A., CASTRO SAMPOL, P., CHAOUL, L., CHARLOT, P., CHIAVASSA, A., CIONI, M.-R.L., COMORETTO, G., COOPER, W.J., CORNEZ, T., COWELL, S., CRIFO, F., CROSTA, M., CROWLEY, C., DAFONTE, C., DAPERGOLAS, A., DAVID, M., DAVID, P., DE LAVERNY, P., DE LUISE, F., DE MARCH, R., DE RIDDER, J., DE SOUZA, R., DE TEODORO, P., DE TORRES, A., DEL PELOSO, E.F., DEL POZO, E., DELGADO, A., DELGADO, H.E., DELISLE, J.-B., DI MATTEO, P., DIAKITE,

S., DIENER, C., DISTEFANO, E., DOLDING, C., EAPPACHEN, D., ENKE, H., ESQUEJ, P., FABRE, C., FABRIZIO, M., FAIGLER, S., FEDORETS, G., FERNIQUE, P., FIENGA, A., FOURON, C., FRAGKOUDI, F., FRAILE, E., FRANKE, F., GAI, M., GARABATO, D., GARCIA-GUTIERREZ, A., GARCÍA-TORRES, M., GAROFALO, A., GAVRAS, P., GERLACH, E., GEYER, R., GIACOBBE, P., GILMORE, G., GIRONA, S., GIUFFRIDA, G., GOMEZ, A., GONZALEZ-SANTAMARIA, I., GONZÁLEZ-VIDAL, J.J., GRANVIK, M., GUTIÉRREZ-SÁNCHEZ, R., GUY, L.P., HAUSER, M., HAYWOOD, M., HIDALGO, S.L., HILGER, T., HŁADCZUK, N., HOBBS, D., HOLLAND, G., HUCKLE, H.E., JASNIEWICZ, G., JONKER, P.G., JUARISTI CAMPILLO, J., JULBE, F., KARBEVSKA, L., KERVELLA, P., KOCHOSKA, A., KONTIZAS, M., KORN, A.J., KOSTRZEWA-RUTKOWSKA, Z., KRUSZYŃSKA, K., LAMBERT, S., LANZA, A.F., LASNE, Y., LE CAMPION, J.-F., LE FUSTEC, Y., LEBRETON, Y., LEBZELTER, T., LECCIA, S., LECLERC, N., LECOEUR-TAIBI, I., LIAO, S., LICATA, E., LINDSTRØM, H.E.P., LISTER, T.A., LIVANOU, E., LOBEL, A., MADRERO PARDO, P., MANAGAU, S., MANN, R.G., MARCHANT, J.M., MARCONI, M., MARCOS SANTOS, M.M.S., MARINONI, S., MAROCCO, F., MARSHALL, D.J., MARTIN POLO, L., MARTÍN-FLEITAS, J.M., MASIP, A., MASSARI, D., MASTROBUONO-BATTISTI, A., MAZEH, T., MESSINA, S., MICHALIK, D., MILLAR, N.R., MINTS, A., MOLINA, D., MOLINARO, R., MOLNÁR, L., MONTEGRIFFO, P., MOR, R., MORBIDELLI, R., MOREL, T., MORRIS, D., MULONE, A.F., MUNOZ, D., MURAVEVA, T., MURPHY, C.P., MUSELLA, I., NOVAL, L., ORDÉNOVIC, C., ORRÙ, G., OSINDE, J., PAGANI, C., PAGANO, I., PALAVERSA, L., PALICIO, P.A., PANAHI, A., PAWLAK, M., PEÑALOSA ESTELLER, X., PENTTILÄ, A., PIERSIMONI, A.M., PINEAU, F.-X., PLACHY, E., PLUM, G., POGGIO, E., PORETTI, E., POUJOULET, E., PRŠA, A., PULONE, L., RACERO, E., RAGAINI, S., RAINER, M., RAITERI, C.M., RAMBAUX, N., RAMOS-LERATE, M., RE FIORENTIN, P., REGIBO, S., REYLÉ, C., RIPEPI, V., RIVA, A., RIXON, G., ROBICHON, N., ROBIN, C., ROELENS, M., ROHRBASSER, L., ROWELL, N., ROYER, F., RYBICKI, K.A., SADOWSKI, G., SAGRISTÀ SELLÉS, A., SAHLMANN, J., SALGADO, J., SALGUERO, E., SAMARAS, N., SANCHEZ GIMENEZ, V., SANNA, N., SANTOVEÑA, R., SARASSO, M., SCHULTHEIS, M., SCIACCA, E., SEGOL, M., SEGOVIA, J.C., SÉGRANSAN, D., SEMEUX, D., SIDDIQUI, H.I., SIEBERT, A., SILTALA, L., SLEZAK, E., SMART, R.L., SOLANO, E., SOLITRO, F., SOUAMI, D., SOUCHAY, J., SPAGNA, A., SPOTO, F., STEELE, I.A., STEIDELMÜLLER, H., STEPHENSON, C.A., SÜVEGES, M., SZABADOS, L., SZEGEDI-ELEK, E., TARIS, F., TAURAN, G., TAYLOR, M.B., TEIXEIRA, R., THUILLOT, W., TONELLO, N., TORRA, F., TORRA, J., TURON, C., UNGER, N., VAILLANT, M., VAN DILLEN, E., VANEL, O., VECCHIATO, A., VIALA, Y., VICENTE, D., VOUTSINAS, S., WEILER, M., WEVERS, T., WYRZYKOWSKI, L., YOLDAS, A., YVARD, P., ZHAO, H., ZOREC, J., ZUCKER, S., ZURBACH, C. y ZWITTER, T., 2021. Gaia Early Data Release 3: The Galactic anticentre. *Astronomy and Astrophysics* [en línea], vol. 649. DOI 10.1051/0004-6361/202039714.

Aims. We aim to demonstrate the scientific potential of the Gaia Early Data Release 3 (EDR3) for the study of different aspects of the Milky Way structure and evolution

and we provide, at the same time, a description of several practical aspects of the data and examples of their usage. Methods. We used astrometric positions, proper motions, parallaxes, and photometry from EDR3 to select different populations and components and to calculate the distances and velocities in the direction of the anticentre. In this direction, the Gaia astrometric data alone enable the calculation of the vertical and azimuthal velocities; also, the extinction is relatively low compared to other directions in the Galactic plane. We then explore the disturbances of the current disc, the spatial and kinematical distributions of early accreted versus in situ stars, the structures in the outer parts of the disc, and the orbits of open clusters Berkeley 29 and Saurer 1. Results. With the improved astrometry and photometry of EDR3, we find that: (i) the dynamics of the Galactic disc are very complex with oscillations in the median rotation and vertical velocities as a function of radius, vertical asymmetries, and new correlations, including a bimodality with disc stars with large angular momentum moving vertically upwards from below the plane, and disc stars with slightly lower angular momentum moving preferentially downwards; (ii) we resolve the kinematic substructure (diagonal ridges) in the outer parts of the disc for the first time; (iii) the red sequence that has been associated with the proto-Galactic disc that was present at the time of the merger with Gaia-Enceladus-Sausage is currently radially concentrated up to around 14 kpc, while the blue sequence that has been associated with debris of the satellite extends beyond that; (iv) there are density structures in the outer disc, both above and below the plane, most probably related to Monoceros, the Anticentre Stream, and TriAnd, for which the Gaia data allow an exhaustive selection of candidate member stars and dynamical study; and (v) the open clusters Berkeley 29 and Saurer 1, despite being located at large distances from the Galactic centre, are on nearly circular disc-like orbits. Conclusions. Even with our simple preliminary exploration of the Gaia EDR3, we demonstrate how, once again, these data from the European Space Agency are crucial for our understanding of the different pieces of our Galaxy and their connection to its global structure and history. © ESO 2021.

ARROYO YANES, L.M., 2021a. El tratamiento de categorías especiales de datos personales con fines de archivo en interés público y de investigación histórica (Comentario al artículo 9.2.j) RGPD). *Comentario al Reglamento General de Proteción de Datos y a la Ley Orgánica de Protección de Datos personales y Garantía de los Derechos Digitales*. S.l.: Aranzadi, pp. 1259-1280. ISBN 978-84-9197-925-8.

ARROYO YANES, L.M., 2021b. Garantías y excepciones aplicables al tratamiento con fines de archivo en interés público o de investigación histórica (Comentario al artículo 89 RGPD). *Comentario al Reglamento General de Proteción de Datos y a la Ley Orgánica de Protección de Datos personales y Garantía de los Derechos Digitales*. S.l.: Aranzadi, pp. 3377-3393. ISBN 978-84-1346-102-1.

ARROYO YANES, L.M., 2021c. Régimen del tratamiento de datos personales con fines

de archivo en interés público por parte de las administraciones públicas (Comentario al art. 26 LOPDGDD). *Comentario al Reglamento General de Proteción de Datos y a la Ley Orgánica de Protección de Datos personales y Garantía de los Derechos Digitales*. S.l.: Aranzadi, pp. pp. 3783-3821. ISBN 978-84-1346-102-1.

BAYONA-FELIÚ, A., BARROSO, S., MUÑOZ, S. y AGUILERA, A., 2021. The SWI/SNF chromatin remodeling complex helps resolve R-loop-mediated transcription-replication conflicts. *Nature Genetics*, ISSN 1061-4036. DOI 10.1038/s41588-021-00867-2.

ATP-dependent chromatin remodelers are commonly mutated in human cancer. Mammalian SWI/SNF complexes comprise three conserved multisubunit chromatin remodelers (cBAF, ncBAF and PBAF) that share the BRG1 (also known as SMARCA4) subunit responsible for the main ATPase activity. BRG1 is the most frequently mutated Snf2-like ATPase in cancer. In the present study, we have investigated the role of SWI/SNF in genome instability, a hallmark of cancer cells, given its role in transcription, DNA replication and DNA-damage repair. We show that depletion of BRG1 increases R-loops and R-loop-dependent DNA breaks, as well as transcription-replication (T-R) conflicts. BRG1 colocalizes with R-loops and replication fork blocks, as determined by FANCD2 foci, with BRG1 depletion being epistatic to FANCD2 silencing. Our study, extended to other components of SWI/SNF, uncovers a key role of the SWI/SNF complex, in particular cBAF, in helping resolve R-loop-mediated T-R conflicts, thus, unveiling a new mechanism by which chromatin remodeling protects genome integrity. The SWI/SNF complex helps resolve R-loop-mediated transcription-replication conflicts, as depletion of SWI/SNF complex member BRG1 increases R-loops, R-loop-dependent DNA breaks and transcription-replication conflicts.

BENÍTEZ-BENÍTEZ, C., MARTÍN-BRAVO, S., BJORA, C.S., GEBAUER, S., HIPP, A.L., HOFFMANN, M.H., LUCENO, M., PEDERSEN, T.M., REZNICEK, A., ROALSON, E., VOLKOVA, P., YANO, O., SPALINK, D. y JIMÉNEZ-MEJÍAS, P., 2021. Geographical vs. ecological diversification in Carex section Phacocystis (Cyperaceae): Patterns hidden behind a twisted taxonomy. *Journal of Systematics and Evolution*, ISSN 1674-4918. DOI 10.1111/jse.12731.

Carex section Phacocystis (Cyperaceae) is one of the most diverse and taxonomically complex groups of sedges (between 116 and 147 species), with a worldwide distribution in a wide array of biomes. It has a very complicated taxonomic history, with numerous disagreements among different treatments. We studied the biogeography and niche evolution in a phylogenetic framework to unveil the relative contribution of geographical and ecological drivers to diversification of the group. We used a large species sampling of the section (82% of extant species) to build a phylogeny based on four DNA regions, constrained with a phylogenomic HybSeq tree and dated with six fossil calibrations. Our

phylogenetic results recovered section Phacocystis s.s. (core Phacocystis) as sister to section Praelongae. Ancestral area reconstruction points toward the N Pacific as the cradle for the crown diversification of section Phacocystis during the Middle Miocene. Wide distributions were recurrently inferred across deep nodes. Large Northern Hemisphere lineages with geographical congruence were retrieved, pointing toward the importance of allopatric divergence at deep phylogenetic levels, whereas within-area speciation emerges as the predominant pattern at shallow phylogenetic level. The Southern Hemisphere (Neotropics, SW Pacific) was colonized several times from the Northern Hemisphere. The global expansion of Carex section Phacocystis did not entail major ecological changes along the inner branches of the phylogeny. Nevertheless, ecological differentiation seems to gain importance toward recent times.

BERMUDO, S., HIGUITA, R.A. y RADA, J., 2021. Domination number of catacondensed hexagonal systems. *Journal of Mathematical Chemistry*, vol. 59, no. 5, pp. 1348-1367. DOI 10.1007/s10910-021-01243-5.

In this paper we answer all the conjectures about the domination number of a catacondensed hexagonal system given in Automated Conjecturing VI: Domination Number of Benzenoids. Moreover, we give lower bounds for the domination number in catacondensed hexagonal systems using the number of hexagons and the number of branching hexagons. © 2021, The Author(s), under exclusive licence to Springer Nature Switzerland AG.

BERMUDO, S., MONSALVE, J. y RADA, J., 2021. Orientations of hexagonal chains with extremal values of the Randic index. *International Journal of Quantum Chemistry*, pp. e26744. ISSN 0020-7608. DOI 10.1002/qua.26744.

Let D be a digraph with set of vertices V(D) and set of arcs A(D). Recently, the Randic index of D was extended to digraphs as R(D) = 1/2(uv is an element of A(D)) Sigma 1/root d(D)(+)(u)d(D)(-)(v), where d(D)(+)(u) and d(D)(-)(v) are the out-degree and in-degree of u and v, respectively. In this paper we study the extremal values of R over the set of all orientations of hexagonal chains with k hexagons.

BLANCO, G., ROMERO-VIDAL, P., CARRETE, M., CHAMORRO, D., BRAVO, C., HIRALDO, F. y TELLA, J.L., 2021. Burrowing Parrots Cyanoliseus patagonus as Long-Distance Seed Dispersers of Keystone Algarrobos, Genus Prosopis, in the Monte Desert. *Diversity-Basel*, vol. 13, no. 5, pp. 204. DOI 10.3390/d13050204.

Understanding of ecosystem structure and functioning requires detailed knowledge about plant-animal interactions, especially when keystone species are involved. The recent consideration of parrots as legitimate seed dispersers has widened the range of mechanisms influencing the life cycle of many plant species. We examined the interactions between the burrowing parrot Cyanoliseus patagonus and two

dominant algarrobo trees (Prosopis alba and Prosopis nigra) in the Monte Desert, Argentina. We recorded the abundance and foraging behaviour of parrots; quantified the handling, consumption, wasting, and dispersal of ripe and unripe pods; and tested the viability of soft and hard ripe seeds wasted and transported by parrots. We found a high abundance of burrowing parrots. They predated on soft seeds from unripe pods while exclusively feeding upon pulp wrapping hard seeds from ripe pods. Frequent pod wasting beneath the plant or transport at a distance invariably implied the dispersal of multiple seeds in each event. Moreover, soft seeds retained viability after desiccation outside the mother plant, suggesting effective seed dispersal after partial pod predation due to a predator satiation effect. In about half of the foraging flocks, at least one parrot departed in flight with pods in its beak, with 10-34% of the flock components moving pods at distances averaging 238 m (P. alba) and 418 m (P. nigra). A snapshot sampling of faeces from livestock and wild mammals suggested a low frequency of seed dispersal by endozoochory and secondary dispersal by ants and dung beetles. The nomadic movements and long flights of burrowing parrots between breeding and foraging sites can lead to the dispersal of huge amounts of seeds across large areas that are sequentially exploited. Further research should evaluate the role of the burrowing parrot as a functionally unique species in the structure of the Monte Desert woods and the genetic structure of algarrobo species.

BOGINO LARRAMBEBERE, V., JURADO GUERRERO, T., BOTÍA-MORILLAS, C., MONFERRER TOMÀS, J. y ABRIL, P., 2021. ¿Cómo interactúan la orientación personal, los acuerdos de pareja y la cultura organizacional en el logro de paternidades cuidadoras? *Empiria: Revista de metodología de ciencias sociales*, no. 51, pp. 125-152. ISSN 1139-5737. 10.5944/empiria.51.2021.30810

Esta investigación se propone analizar cómo y por qué los padres heterosexuales que trabajan en pymes se implican en los cuidados, prestando especial atención a sus procesos personales, de pareja y a su contexto laboral. Para ello se han realizado entrevistas a padres con pareja y menores de hasta 12 años, tanto supervisores como supervisados, que trabajaban en empresas con distintivo o prácticas de igualdad y que han disfrutado de medidas de conciliación. Los resultados muestran que para llegar a ser un padre comprometido con los cuidados es necesario adoptar determinadas orientaciones y prácticas personales, tanto por parte del padre como de la pareja, junto con la existencia de elementos facilitadores aportados por las empresas. Sin embargo, un contexto laboral facilitador no representa una condición necesaria ni suficiente para ejercer de padre cuidador.

BROWN, A.G.A., VALLENARI, A., PRUSTI, T., DE BRUIJNE, J.H.J., BABUSIAUX, C., BIERMANN, M., CREEVEY, O.L., EVANS, D.W., EYER, L., HUTTON, A., JANSEN, F., JORDI, C., KLIONER, S.A., LAMMERS, U., LINDEGREN, L., LURI, X., MIGNARD, F., PANEM, C., POURBAIX, D., RANDICH, S., SARTORETTI, P., SOUBIRAN, C., WALTON, N.A., ARENOU, F., BAILER-JONES, C.A.L., BASTIAN, U., CROPPER, M., DRIMMEL, R., KATZ, D., LATTANZI, M.G., VAN LEEUWEN, F., BAKKER, J., CACCIARI, C., CASTAÑEDA, J., DE ANGELI, F., DUCOURANT, C., FABRICIUS, C.,

FOUESNEAU, M., FRÉMAT, Y., GUERRA, R., GUERRIER, A., GUIRAUD, J., JEAN-ANTOINE PICCOLO, A., MASANA, E., MESSINEO, R., MOWLAVI, N., NICOLAS, C., NIENARTOWICZ, K., PAILLER, F., PANUZZO, P., RICLET, F., ROUX, W., SEABROKE, G.M., SORDO, R., TANGA, P., THÉVENIN, F., GRACIA-ABRIL, G., PORTELL, J., TEYSSIER, D., ALTMANN, M., ANDRAE, R., BELLAS-VELIDIS, I., BENSON, K., BERTHIER, J., BLOMME, R., BRUGALETTA, E., BURGESS, P.W., BUSSO, G., CARRY, B., CELLINO, A., CHEEK, N., CLEMENTINI, G., DAMERDJI, Y., DAVIDSON, M., DELCHAMBRE, L., DELL'ORO, A., FERNÁNDEZ-HERNÁNDEZ, J., GALLUCCIO, L., GARCÍA-LARIO, P., GARCIA-REINALDOS, M., GONZÁLEZ-NÚÑEZ, J., GOSSET, E., HAIGRON, R., HALBWACHS, J.-L., HAMBLY, N.C., HARRISON, D.L., HATZIDIMITRIOU, D., HEITER, U., HERNÁNDEZ, J., HESTROFFER, D., HODGKIN, S.T., HOLL, B., JANSSEN, K., JEVARDAT DE FOMBELLE, G., JORDAN, S., KRONE-MARTINS, A., LANZAFAME, A.C., LÖFFLER, W., LORCA, A., MANTEIGA, M., MARCHAL, O., MARRESE, P.M., MOITINHO, A., MORA, A., MUINONEN, K., OSBORNE, P., PANCINO, E., PAUWELS, T., PETIT, J.-M., RECIO-BLANCO, A., RICHARDS, P.J., RIELLO, M., RIMOLDINI, L., ROBIN, A.C., ROEGIERS, T., RYBIZKI, J., SARRO, L.M., SIOPIS, C., SMITH, M., SOZZETTI, A., ULLA, A., UTRILLA, E., VAN LEEUWEN, M., VAN REEVEN, W., ABBAS, U., ABREU ARAMBURU, A., ACCART, S., AERTS, C., AGUADO, J.J., AJAJ, M., ALTAVILLA, G., ÁLVAREZ, M.A., ÁLVAREZ CID-FUENTES, J., ALVES, J., ANDERSON, R.I., ANGLADA VARELA, E., ANTOJA, T., AUDARD, M., BAINES, D., BAKER, S.G., BALAGUER-NÚÑEZ, L., BALBINOT, E., BALOG, Z., BARACHE, C., BARBATO, D., BARROS, M., BARSTOW, M.A., BARTOLOMÉ, S., BASSILANA, J.-L., BAUCHET, N., BAUDESSON-STELLA, A., BECCIANI, U., BELLAZZINI, M., BERNET, M., BERTONE, S., BIANCHI, L., BLANCO-CUARESMA, S., BOCH, T., BOMBRUN, A., BOSSINI, D., BOUQUILLON, S., BRAGAGLIA, A., BRAMANTE, L., BREEDT, E., BRESSAN, A., BROUILLET, N., BUCCIARELLI, B., BURLACU, A., BUSONERO, D., BUTKEVICH, A.G., BUZZI, R., CAFFAU, E., CANCELLIERE, R., CÁNOVAS, H., CANTAT-GAUDIN, T., CARBALLO, R., CARLUCCI, T., CARNERERO, M.I., CARRASCO, J.M., CASAMIQUELA, L., CASTELLANI, M., CASTRO-GINARD, A., CASTRO SAMPOL, P., CHAOUL, L., CHARLOT, P., CHEMIN, L., CHIAVASSA, A., CIONI, M.-R.L., COMORETTO, G., COOPER, W.J., CORNEZ, T., COWELL, S., CRIFO, F., CROSTA, M., CROWLEY, C., DAFONTE, C., DAPERGOLAS, A., DAVID, M., DAVID, P., DE LAVERNY, P., DE LUISE, F., DE MARCH, R., DE RIDDER, J., DE SOUZA, R., DE TEODORO, P., DE TORRES, A., DEL PELOSO, E.F., DEL POZO, E., DELBO, M., DELGADO, A., DELGADO, H.E., DELISLE, J.-B., DI MATTEO, P., DIAKITE, S., DIENER, C., DISTEFANO, E., DOLDING, C., EAPPACHEN, D., EDVARDSSON, B., ENKE, H., ESQUEJ, P., FABRE, C., FABRIZIO, M., FAIGLER, S., FEDORETS, G., FERNIQUE, P., FIENGA, A., FIGUERAS, F., FOURON, C., FRAGKOUDI, F., FRAILE, E., FRANKE, F., GAI, M., GARABATO, D., GARCIA-GUTIERREZ, A., GARCÍA-TORRES, M., GAROFALO, A., GAVRAS, P., GERLACH, E., GEYER, R., GIACOBBE, P., GILMORE, G., GIRONA, S., GIUFFRIDA, G., GOMEL, R., GOMEZ, A., GONZALEZ-SANTAMARIA, I., GONZÁLEZ-VIDAL, J.J., GRANVIK, M., GUTIÉRREZ-SÁNCHEZ, R., GUY, L.P.,

HAUSER, M., HAYWOOD, M., HELMI, A., HIDALGO, S.L., HILGER, T., HŁADCZUK, N., HOBBS, D., HOLLAND, G., HUCKLE, H.E., JASNIEWICZ, G., JONKER, P.G., JUARISTI CAMPILLO, J., JULBE, F., KARBEVSKA, L., KERVELLA, P., KHANNA, S., KOCHOSKA, A., KONTIZAS, M., KORDOPATIS, G., KORN, A.J., KOSTRZEWA-RUTKOWSKA, Z., KRUSZYŃSKA, K., LAMBERT, S., LANZA, A.F., LASNE, Y., LE CAMPION, J.-F., LE FUSTEC, Y., LEBRETON, Y., LEBZELTER, T., LECCIA, S., LECLERC, N., LECOEUR-TAIBI, I., LIAO, S., LICATA, E., LINDSTRØM, E.P., LISTER, T.A., LIVANOU, E., LOBEL, A., MADRERO PARDO, P., MANAGAU, S., MANN, R.G., MARCHANT, J.M., MARCONI, M., MARCOS SANTOS, M.M.S., MARINONI, S., MAROCCO, F., MARSHALL, D.J., MARTIN POLO, L., MARTÍN-FLEITAS, J.M., MASIP, A., MASSARI, D., MASTROBUONO-BATTISTI, A., MAZEH, T., MCMILLAN, P.J., MESSINA, S., MICHALIK, D., MILLAR, N.R., MINTS, A., MOLINA, D., MOLINARO, R., MOLNÁR, L., MONTEGRIFFO, P., MOR, R., MORBIDELLI, R., MOREL, T., MORRIS, D., MULONE, A.F., MUNOZ, D., MURAVEVA, T., MURPHY, C.P., MUSELLA, I., NOVAL, L., ORDÉNOVIC, C., ORRÙ, G., OSINDE, J., PAGANI, C., PAGANO, I., PALAVERSA, L., PALICIO, P.A., PANAHI, A., PAWLAK, M., PEÑALOSA ESTELLER, X., PENTTILÄ, A., PIERSIMONI, A.M., PINEAU, F.-X., PLACHY, E., PLUM, G., POGGIO, E., PORETTI, E., POUJOULET, E., PRŠA, A., PULONE, L., RACERO, E., RAGAINI, S., RAINER, M., RAITERI, C.M., RAMBAUX, N., RAMOS, P., RAMOS-LERATE, M., RE FIORENTIN, P., REGIBO, S., REYLÉ, C., RIPEPI, V., RIVA, A., RIXON, G., ROBICHON, N., ROBIN, C., ROELENS, M., ROHRBASSER, L., ROMERO-GÓMEZ, M., ROWELL, N., ROYER, F., RYBICKI, K.A., SADOWSKI, G., SAGRISTÀ SELLÉS, A., SAHLMANN, J., SALGADO, J., SALGUERO, E., SAMARAS, N., SANCHEZ GIMENEZ, V., SANNA, N., SANTOVEÑA, R., SARASSO, M., SCHULTHEIS, M., SCIACCA, E., SEGOL, M., SEGOVIA, J.C., SÉGRANSAN, D., SEMEUX, D., SHAHAF, S., SIDDIQUI, H.I., SIEBERT, A., SILTALA, L., SLEZAK, E., SMART, R.L., SOLANO, E., SOLITRO, F., SOUAMI, D., SOUCHAY, J., SPAGNA, A., SPOTO, F., STEELE, I.A., STEIDELMÜLLER, H., STEPHENSON, C.A., SÜVEGES, M., SZABADOS, L., SZEGEDI-ELEK, E., TARIS, F., TAURAN, G., TAYLOR, M.B., TEIXEIRA, R., THUILLOT, W., TONELLO, N., TORRA, F., TORRA, J., TURON, C., UNGER, N., VAILLANT, M., VAN DILLEN, E., VANEL, O., VECCHIATO, A., VIALA, Y., VICENTE, D., VOUTSINAS, S., WEILER, M., WEVERS, T., WYRZYKOWSKI, L., YOLDAS, A., YVARD, P., ZHAO, H., ZOREC, J., ZUCKER, S., ZURBACH, C. y ZWITTER, T., 2021. Gaia Early Data Release 3: Summary of the contents and survey properties. *Astronomy and Astrophysics* [en línea], vol. 649. DOI 10.1051/0004-6361/202039657.

Context. We present the early installment of the third Gaia data release, Gaia EDR3, consisting of astrometry and photometry for 1.8 billion sources brighter than magnitude 21, complemented with the list of radial velocities from Gaia DR2. Aims. A summary of the contents of Gaia EDR3 is presented, accompanied by a discussion on the differences with respect to Gaia DR2 and an overview of the main limitations which are present in the survey. Recommendations are made on the responsible use of Gaia EDR3 results. Methods. The raw data collected with

the Gaia instruments during the first 34 months of the mission have been processed by the Gaia Data Processing and Analysis Consortium and turned into this early third data release, which represents a major advance with respect to Gaia DR2 in terms of astrometric and photometric precision, accuracy, and homogeneity. Results. Gaia EDR3 contains celestial positions and the apparent brightness in G for approximately 1.8 billion sources. For 1.5 billion of those sources, parallaxes, proper motions, and the (GBP - GRP) colour are also available. The passbands for G, GBP, and GRP are provided as part of the release. For ease of use, the 7 million radial velocities from Gaia DR2 are included in this release, after the removal of a small number of spurious values. New radial velocities will appear as part of Gaia DR3. Finally, Gaia EDR3 represents an updated materialisation of the celestial reference frame (CRF) in the optical, the Gaia-CRF3, which is based solely on extragalactic sources. The creation of the source list for Gaia EDR3 includes enhancements that make it more robust with respect to high proper motion stars, and the disturbing effects of spurious and partially resolved sources. The source list is largely the same as that for Gaia DR2, but it does feature new sources and there are some notable changes. The source list will not change for Gaia DR3. Conclusions. Gaia EDR3 represents a significant advance over Gaia DR2, with parallax precisions increased by 30 per cent, proper motion precisions increased by a factor of 2, and the systematic errors in the astrometry suppressed by 30-40% for the parallaxes and by a factor ~2.5 for the proper motions. The photometry also features increased precision, but above all much better homogeneity across colour, magnitude, and celestial position. A single passband for G, GBP, and GRP is valid over the entire magnitude and colour range, with no systematics above the 1% level © ESO 2021.

BUCHBERGER, E., BILEN, A., AYAZ, S., SALAMANCA, D., MATAS DE LAS HERAS, C., NIKSIC, A., ALMUDI, I., TORRES-OLIVA, M., CASARES, F. y POSNIEN, N., 2021. Variation in Pleiotropic Hub Gene Expression Is Associated with Interspecific Differences in Head Shape and Eye Size in Drosophila. *Molecular Biology and Evolution*, vol. 38, no. 5, pp. 1924-1942. DOI 10.1093/molbev/msaa335.

Revealing the mechanisms underlying the breathtaking morphological diversity observed in nature is a major challenge in Biology. It has been established that recurrent mutations in hotspot genes cause the repeated evolution of morphological traits, such as body pigmentation or the gain and loss of structures. To date, however, it remains elusive whether hotspot genes contribute to natural variation in the size and shape of organs. As natural variation in head morphology is pervasive in Drosophila, we studied the molecular and developmental basis of differences in compound eye size and head shape in two closely related Drosophila species. We show differences in the progression of retinal differentiation between species and we applied comparative transcriptomics and chromatin accessibility data to identify the GATA transcription factor Pannier (Pnr) as central factor associated with these differences. Although the genetic manipulation of Pnr affected multiple aspects of dorsal head development, the effect of natural variation is restricted to a subset of the phenotypic space. We present data suggesting that this developmental constraint is caused by the coevolution of expression of pnr and its cofactor u-shaped (ush). We propose that natural variation in expression or

function of highly connected developmental regulators with pleiotropic functions is a major driver for morphological evolution and we discuss implications on gene regulatory network evolution. In comparison to previous findings, our data strongly suggest that evolutionary hotspots are not the only contributors to the repeated evolution of eye size and head shape in Drosophila. © 2021 The Author(s).

BUENO, A. y GALLEGO COSME, M.J., 2021. Spain's Defence Diplomacy in Ibero-America: A Soft Power Strategy? *Methaodos-Revista De Ciencias Sociales*, vol. 9, no. 1, pp. 27-44. ISSN 2340-8413. DOI 10.17502/mrcs.v9i1.435.

Spain has been deploying its defense diplomacy towards Ibero-America for decades but, despite the interest that this issue has triggered, a patent absence of theoretical approaches persists. However, there is a growing scientific literature making use of the soft power concept to explain the strategic implications of the defense diplomacy. For this reason, this research adopts the mentioned conceptual framework to examine a field of the political-diplomatic relations between Spain and Ibero-America with two objectives: first, to study whether the initiatives do indeed fit into this soft power concept; and second, to investigate its strategic approach. To accomplish those goals, an analysis of top-level Spanish political-strategic documents and other official documentary sources is carried out, as well as a review of the specialized bibliography of the area, and of other documents made from specialized institutions. The results show the ambiguity and limitations of the Spanish strategic objectives, the loss of prominence of Ibero-America in terms of interest for the national defense, or trade in the defense industry, and certain inconsistencies between the ways, means and ends. The conclusions section discusses the uncritical inclusion of various initiatives under the defense diplomacy category, and the lack of a strategic approach from a soft power approach.

CABELLO-MANRIQUE, D., NUVIALA, R., PAPPOUS, A., PUGA-GONZÁLEZ, E. y NUVIALA, A., 2021. The Mediation of Emotions in Sport Events: A Case Study in Badminton. *Journal of Hospitality and Tourism Research*, vol. 45, no. 4, pp. 591-609. DOI 10.1177/1096348020950813.

This study examines the relationships between functional quality, outcome quality, satisfaction, and future intentions, influenced by emotions, of spectators who attended the 2018 European Badminton Championships. The population studied was 686 spectators. The mean age was 36.08 ± 14.15 years, 39.1% were females, and 66.1% were local resident spectators. The results allow to affirm that functional quality and outcome quality have an impact on satisfaction, either directly or indirectly through emotions. In the same way, it has been possible to observe the relationship between satisfaction and future intentions of the spectators. These results help understand the factors that predict the loyalty of spectators of sports events of badminton. © The Author(s) 2020.

CABEZAS GARCÍA, Á., 2021. Campaña y Velázquez: paralelos artísticos. *Revista de humanidades*, no. 42, pp. 157-178. ISSN 1130-5029. 10.5944/rdh.42.2021.26925

Abstract: To contribute to the comprehension of the painting of Diego Velázquez is the main objective of this study, is to point out some of the latent sevillian roots that the artist kept in his extensive Madrid's stage. In this logic, I would like to analyze the relationships arising from the comparison of the table that represents to San Pablo Ermitaño y San Antonio by Pedro de Campaña, and the painting of Velázquez with a similar theme: Encuentro de San Antonio Abad con San Pablo, primer ermitaño.

CAMARERO, J.J., GAZOL, A., SÁNCHEZ-SALGUERO, R., FAJARDO, A., MCINTIRE, E.J.B., GUTIÉRREZ, E., BATLLORI, E., BOUDREAU, S., CARRER, M., DIEZ, J., DUFOUR-TREMBLAY, G., GAIRE, N.P., HOFGAARD, A., JOMELLI, V., KIRDYANOV, A.V., LÉVESQUE, E., LIANG, E., LINARES, J.C., MATHISEN, I.E., MOISEEV, P.A., SANGÜESA-BARREDA, G., SHRESTHA, K.B., TOIVONEN, J.M., TUTUBALINA, O.V. y WILMKING, M., 2021. Global fading of the temperature–growth coupling at alpine and polar treelines. *Global Change Biology*, vol. 27, no. 9, pp. 1879-1889. DOI 10.1111/gcb.15530.

Climate warming is expected to positively alter upward and poleward treelines which are controlled by low temperature and a short growing season. Despite the importance of treelines as a bioassay of climate change, a global field assessment and posterior forecasting of tree growth at annual scales is lacking. Using annually resolved tree-ring data located across Eurasia and the Americas, we quantified and modeled the relationship between temperature and radial growth at treeline during the 20th century. We then tested whether this temperature–growth association will remain stable during the 21st century using a forward model under two climate scenarios (RCP 4.5 and 8.5). During the 20th century, growth enhancements were common in most sites, and temperature and growth showed positive trends. Interestingly, the relationship between temperature and growth trends was contingent on tree age suggesting biogeographic patterns in treeline growth are contingent on local factors besides climate warming. Simulations forecast temperature–growth decoupling during the 21st century. The growing season at treeline is projected to lengthen and growth rates would increase and become less dependent on temperature rise. These forecasts illustrate how growth may decouple from climate warming in cold regions and near the margins of tree existence. Such projected temperature–growth decoupling could impact ecosystem processes in mountain and polar biomes, with feedbacks on climate warming. © 2021 John Wiley & Sons Ltd

CAMBRA-FIERRO, J.J., FUENTES-BLASCO, M., HUERTA-ÁLVAREZ, R. y OLAVARRIA, A., 2021. Customer-based brand equity and customer engagement in experiential services: insights from an emerging economy. *Service Business*,

ISSN 1862-8516. DOI 10.1007/s11628-021-00448-7.

The aim of this research is to analyze links between customer-based brand equity and customer engagement in the field of experiential services (e.g., private health clinics)-taking an emerging economy context as our reference. The authors put forth a chain of effects-based in Social Capital Theory-to test the impact of customer-based brand equity on customer engagement, mediated by satisfaction and customer reputation. Causal model estimation results suggest that customer-based brand equity has both a direct, positive impact on customer satisfaction and customer reputation and an indirect impact on customer engagement. The final section of the paper presents theoretical discussion of the results and the main implications for business practice.

CAÑIBANO-HERNÁNDEZ, A., VALDÉS-SÁNCHEZ, L., GARCÍA-DELGADO, A.B., PONTE-ZÚÑIGA, B., DÍAZ-CORRALES, F.J. y DE LA CERDA, B., 2021. Generation of the human iPSC line ESi082-A from a patient with macular dystrophy associated to mutations in the CRB1 gene. *Stem Cell Research* [en línea], vol. 53. DOI 10.1016/j.scr.2021.102301.

Retinal dystrophies associated to mutations in the CRB1 gene comprise a wide array of clinical presentations. A blood sample from a patient with a family history of CRB1-retinal dystrophy was used to prepare the iPSC line ESi082-A. The genotype of the donor, affected of a perifoveal-bilateral macular dystrophy includes one frameshift deletion and one hypomorphic allele. ESi082-A cell line has been characterized for pluripotency and will be used to prepare retinal cellular models to study the dysfunction leading to the disease. © 2021

CAO-ALVIRA, J.J., NOVOA-HOYOS, A. y NÚÑEZ-TORRES, A., 2021. On the financial literacy, indebtedness, and wealth of Colombian households. *Review of Development Economics*, vol. 25, no. 2, pp. 978-993. DOI 10.1111/rode.12739.

In this paper we attempt to find existing linkages of financial literacy with indebtedness and wealth accumulation of households in Bogotá, the capital of Colombia. We analyze an econometric model where we regress a household's debt usage, cost of debt servicing, and wealth indicators against its financial literacy. Financial literacy is assessed according to the financial numeracy and money management skills of the head of households. Numeracy skills are found to have a positive correlation with the decision to use debt and have a mortgage and with the total number of lending sources, debt-to-income, and net worth. Money management skills decrease the household's likelihood of using all of the debt types considered in the analysis and increase with net worth. We also uncover important debt and wealth accumulation conducts closely tied to the city's economic stratification and the gender of the head of household. A number of public policy implications are derived from the results of the analysis. © 2020 John Wiley & Sons Ltd

CHENET, S.M., OYARCE, A., FERNÁNDEZ, J., TAPIA-LIMONCHI, R., WEITZEL, T., TEJEDO, J.R., UDHAYAKUMAR, V., JERCIC, M.I. y LUCCHI, N.W., 2021. Atovaquone/proguanil resistance in an imported malaria case in Chile. *American Journal of Tropical Medicine and Hygiene*, vol. 104, no. 5, pp. 1811-1813. DOI 10.4269/ajtmh.20-1095.

In November 2018, we diagnosed a cluster of falciparum malaria cases in three Chilean travelers returning from Nigeria. Two patients were treated with sequential intravenous artesunate plus oral atovaquone/proguanil (AP) and one with oral AP. The third patient, a 23-year-old man, presented with fever on day 29 after oral AP treatment and was diagnosed with recrudescent falciparum malaria. The patient was then treated with oral mefloquine, followed by clinical recovery and resolution of parasitemia. Analysis of day 0 and follow-up blood samples, collected on days 9, 29, 34, 64, and 83, revealed that parasitemia had initially decreased but then increased on day 29. Sequencing confirmed Tyr268Cys mutation in the cytochrome b gene, associated with atovaquone resistance, in isolates collected on days 29 and 34 and P. falciparum dihydrofolate reductase mutation Asn51Ile, associated with proguanil resistance in all successfully sequenced samples. Molecular characterization of imported malaria contributes to clinical management in non-endemic countries, helps ascertain the appropriateness of antimalarial treatment policies, and contributes to the reporting of drug resistance patterns from endemic regions. Copyright © 2021 by The American Society of Tropical Medicine and Hygiene.

COLOMER HERNÁNDEZ, I., 2021. Control y límites en el uso de los datos personales penales en la investigación y represión de los delitos a la luz de la Directiva 2016/680. *Nuevos postulados de la cooperación judicial en la Unión Europea: Libro homenaje a la Prof.ª Isabel González Cano*. S.l.: Tirant lo Blanch, pp. 737-781. ISBN 978-84-1378-121-1.

CÓRDOVA-AGUIRRE, L.J. y RAMÓN-JERÓNIMO, J.M., 2021. Exploring the Inclusion of Sustainability into Strategy and Management Control Systems in Peruvian Manufacturing Enterprises. *Sustainability*, vol. 13, no. 9, pp. 5127. DOI 10.3390/su13095127.

The aim of this work is to explore the incorporation of sustainability into strategy and management control systems (MCSs) in Peruvian manufacturing enterprises in the plastics sector. The study focuses on identifying and analyzing the current way they incorporate and manage sustainability to determine the shortcomings that must be corrected in the future to design an effective performance management system (PMS) that includes sustainability to help companies achieve sustainable growth. The method of multiple case study analysis was used. Data was obtained from four Peruvian manufacturing firms in the plastics sector through seven semi-structured interviews. The findings suggest that sustainability is partially incorporated into the company's strategy, and that especially in medium-sized enterprises, managers do not know how to implement sustainable management accurately. Concerning MCSs used, in medium-sized companies, short-term

planning is carried out and they are limited to the control of the economic operational perspective and lack concrete measures regarding social and environmental aspects. Finally, we conclude that this study allowed us to know how sustainability is really managed in Peruvian manufacturing enterprises in the plastics industry and that it is necessary for these companies not only to incorporate sustainability into their strategy but also to implement a holistic PMS to be used as a broad-scope MCS to achieve sustainable growth.

DACAL, M., DELGADO-BAQUERIZO, M., BARQUERO, J., BERHE, A.A., GALLARDO, A., MAESTRE, F.T. y GARCÍA-PALACIOS, P., 2021. Temperature Increases Soil Respiration Across Ecosystem Types and Soil Development, But Soil Properties Determine the Magnitude of This Effect. *Ecosystems*, ISSN 1432-9840. DOI 10.1007/s10021-021-00648-2.

Soil carbon losses to the atmosphere, via soil heterotrophic respiration, are expected to increase in response to global warming, resulting in a positive carbon-climate feedback. Despite the well-known suite of abiotic and biotic factors controlling soil respiration, much less is known about how the magnitude of soil respiration responses to temperature changes over soil development and across contrasting soil properties. Here we investigated the role of soil development stage and soil properties in driving the responses of soil heterotrophic respiration to temperature. We incubated soils from eight chronosequences ranging in soil age from hundreds to million years, and encompassing a wide range of vegetation types, climatic conditions and chronosequences origins, at three assay temperatures (5 degrees C, 15 degrees C and 25 degrees C). We found a consistent positive effect of assay temperature on soil respiration rates across the eight chronosequences evaluated. However, chronosequences parent materials (sedimentary/sand dunes or volcanic) and soil properties (pH, phosphorus content and microbial biomass) determined the magnitude of this temperature effect. Finally, we observed a positive effect of soil development stage on soil respiration across chronosequences that did not alter the magnitude of assay temperature effects. Our work reveals that key soil properties alter the magnitude of the positive effect of temperature on soil respiration found across ecosystem types and soil development stages. This information is essential to better understand the magnitude of the carbon-climate feedback and thus to establish accurate greenhouse gas emission targets.

DE LA CRUZ-RUIZ, P., HERNANDO-RODRÍGUEZ, B., PÉREZ-JIMÉNEZ, M.M., RODRÍGUEZ-PALERO, M.J., MARTÍNEZ-BUENO, M.D., PLA, A., GATSI, R. y ARTAL-SANZ, M., 2021. Prohibitin depletion extends lifespan of a TORC2/SGK-1 mutant through autophagy and the mitochondrial UPR. *Aging Cell*, vol. 20, no. 5, pp. e13359. ISSN 1474-9718. DOI 10.1111/acel.13359.

Mitochondrial prohibitins (PHB) are highly conserved proteins with a peculiar effect on lifespan. While PHB depletion shortens lifespan of wild-type animals, it enhances longevity of a plethora of metabolically compromised mutants, including target

of rapamycin complex 2 (TORC2) mutants sgk-1 and rict-1. Here, we show that sgk-1 mutants have impaired mitochondrial homeostasis, lipogenesis and yolk formation, plausibly due to alterations in membrane lipid and sterol homeostasis. Remarkably, all these features are suppressed by PHB depletion. Our analysis shows the requirement of SRBP1/SBP-1 for the lifespan extension of sgk-1 mutants and the further extension conferred by PHB depletion. Moreover, although the mitochondrial unfolded protein response (UPRmt) and autophagy are induced in sgk-1 mutants and upon PHB depletion, they are dispensable for lifespan. However, the enhanced longevity caused by PHB depletion in sgk-1 mutants requires both, the UPRmt and autophagy, but not mitophagy. We hypothesize that UPRmt induction upon PHB depletion extends lifespan of sgk-1 mutants through autophagy and probably modulation of lipid metabolism.

DEL-CARPIO-DELGADO, J., 2021. Extensión y límites de la jurisdicción de los tribunales nacionales en materia de criminalidad grave con dimensión transnacional. Una primera aproximación. *Nuevos desafíos frente a la criminalidad organizada transnacional y el terrorismo*. S.l.: Dykinson, pp. 15- 0. ISBN 978-84-1377-408-4.

ESTEBAN IBÁÑEZ, M., OLMEDO RUIZ, F.J., MATEOS CLAROS, F. y AMADOR MUÑOZ, L.V., 2021. Ámbitos de diversidad cultural y su incidencia en el rendimiento académico. *Estudios sobre innovación e investigación educativa*. . S.l.: Dykinson, pp. 520-536. ISBN 978-84-1377-303-2.

ESTÉVEZ-LÓPEZ, F., SALAZAR-TORTOSA, D.F., CAMILETTI-MOIRON, D., GAVILÁN-CARRERA, B., APARICIO, V.A., ACOSTA-MANZANO, P., SEGURA-JIMÉNEZ, V., ÁLVAREZ-GALLARDO, I.C., CARBONELL-BAEZA, A., MUNGUIA-IZQUIERDO, D., GEENEN, R., LACERDA, E., DELGADO-FERNÁNDEZ, M., MARTÍNEZ-GONZÁLEZ, L.J., RUIZ, J.R. y ALVAREZ-CUBERO, M.J., 2021. Fatigue in Women with Fibromyalgia: A Gene-Physical Activity Interaction Study. *Journal of Clinical Medicine*, vol. 10, no. 9, pp. 1902. DOI 10.3390/jcm10091902.

Fatigue is a cardinal symptom in fibromyalgia. Fatigue is assumed to be the result of genetic susceptibility and environmental factors. We aimed at examining the role of genetic susceptibility for fatigue in southern Spanish women with fibromyalgia, by looking at single nucleotide polymorphisms in 34 fibromyalgia candidate-genes, at the interactions between genes, and at the gene-physical activity interactions. We extracted DNA from saliva of 276 fibromyalgia women to analyze gene-polymorphisms. Accelerometers registered physical activity and sedentary behavior. Fatigue was assessed with the Multidimensional Fatigue Inventory. Based on the Bonferroni's and False Discovery Rate values, we found that the genotype of the rs4453709 polymorphism (sodium channel protein type 9 subunit alpha, SCN9A, gene) was related to reduced motivation (AT carriers showed the highest reduced motivation) and reduced activity (AA carriers showed

the lowest reduced activity). Carriers of the heterozygous genotype of the rs1801133 (methylene tetrahydrofolate reductase, MTHFR, gene) or rs4597545 (SCN9A gene) polymorphisms who were physically active reported lower scores on fatigue compared to their inactive counterparts. Highly sedentary carriers of the homozygous genotype of the rs7607967 polymorphism (AA/GG genotype; SCN9A gene) presented more reduced activity (a dimension of fatigue) than those with lower levels of sedentary behavior. Collectively, findings from the present study suggest that the contribution of genetics and gene-physical activity interaction to fatigue in fibromyalgia is modest.

FERNÁNDEZ-ALONSO, M.J., RODRÍGUEZ, A., GARCÍA-VELÁZQUEZ, L., DOS SANTOS, E., DE ALMEIDA, L., LAFUENTE, Á., WANG, J.-T., SINGH, B., FANGUEIRO, D. y DURÁN, J., 2021. Integrative effects of increasing aridity and biotic cover on soil attributes and functioning in coastal dune ecosystems. *Geoderma*, vol. 390, pp. 114952. ISSN 0016-7061. DOI 10.1016/j.geoderma.2021.114952.

Climate change-driven increases in aridity will lead to dryland expansion worldwide. In the Atlantic and Mediterranean biogeographic regions, coastal dunes are priority conservation areas highly sensitive to aridification where plants and biological soil crusts may play a key role maintaining ecosystem services. However, we still need further insights into the balance between the effects of increasing aridity and the influence of local vegetation on the soil attributes and functioning of these systems, particularly in transitional areas between humid and arid climatic zones. We sampled 24 dune systems distributed along a natural climate gradient including humid, dry-subhumid and arid environments in the Atlantic coastline of the Iberian Peninsula and investigated (i) how aridity drives the vegetation community structure, soil biotic and abiotic properties and functions in dune ecosystems at a regional scale; and (ii) to what extent soil attributes differ locally under diverse surface microsites (i.e. plants, biocrust and bare soil). Increasing aridity in coastal dunes decreased total biotic cover and favoured the formation of shrub-dominated patches. Vegetation shifts were accompanied by declines in soil microbial diversity, organic matter, nutrient contents and reduced rates of N mineralization. Soil bacterial communities were more sensitive to aridity than fungal communities. Microsites were essential regulators of soil attributes, and their effects were dependent on the degree of aridity. In drylands, shrub microsites were associated to higher soil organic C, microbial (bacterial and fungal) abundance, fungal diversity and potential heterotrophic respiration than bare microsites, likely due to enhanced litter and sediment redistribution. However, at humid and transition systems, microsites controlled soil N pools and microbial diversity, suggesting tight linkages between vegetation patches and soil microorganisms responsible for N availability. These findings provide evidence of the strong negative impacts of aridification on vegetation attributes and nutrient cycling in coastal dunes and highlight the role of the biotic cover in preserving soil fertility, microbial diversity and functioning, particularly in the most arid sites.

FUENTES-LUQUE, A., 2021. Cinema between Latin America and Los Angeles: Origins to 1960. Edited by Colin Gunckel, Jan-Christopher Horak and Lisa Jarvinen. New Brunswick: Rutgers University Press. 2019. 180 pp. *Bulletin of Spanish Studies*, vol. 98, no. 2, pp. 331-332. ISSN 1475-3820.

GALÁN MUÑOZ, A., 2021. Delitos de odio, discurso del odio y derecho penal: ¿Hacia la construcción de injustos penales por peligrosidad estructural? *Derecho penal y política criminal en tiempos convulsos*. S.l.: Tirant lo Blanch, pp. 61-108. ISBN 9788413556253.

GALLEGO, D., GARCÍA-HERRERA, R., LOSADA, T., MOHINO, E. y RODRÍGUEZ DE FONSECA, B., 2021. A Shift in the Wind Regime of the Southern End of the Canary Upwelling System at the Turn of the 20th Century. *Journal of Geophysical Research: Oceans* [en línea], vol. 126, no. 5. DOI 10.1029/2020JC017093.

In this study, we make use of historical wind direction observations to assemble an instrumental upwelling index (DUI) at the southern end of the Canary Current Upwelling System. The DUI covers the period between 1825 and 2014 and, unlike other upwelling indices, it does not rely neither in wind speed nor in reanalyzed data. In this sense, the DUI can be regarded as an instrumental index. Additionally, it avoids the suspected bias toward increasing wind speed of historical wind observations documented in previous research. Our results indicate that the frequency of the alongshore winds at the west coast of Africa between 10°N and 20°N measured by the DUI is significantly related with the wind stress and therefore the upwelling intensity in this region. The DUI presents a significant variability both at interannual and decadal timescales. We have not found any significant trend for the 20th century. However, when the entire length of the series is considered, a large shift toward more frequent alongshore winds is evidenced as a result of several decade-long fluctuations which took place between the late 19th century and the beginning of the 20th century. This fact would imply that a significant change in the upwelling intensity at the southern end of the Canary Current Upwelling System should have occurred at the turn of the 20th century. © 2021. The Authors.

GODOY-CUMILLAF, A., BIZZOZERO-PERONI, B., TOMKINSON, G.R. y BRAZO-SAYAVERA, J., 2021. Physical fitness of Latin America children and adolescents: A protocol for a systematic review and meta-analysis. *BMJ Open* [en línea], vol. 11, no. 5. DOI 10.1136/bmjopen-2020-047122.

Introduction Physical fitness (PF) is an important indicator of health in children and adolescents. Internationally, test batteries have been used to assess overall PF. In Latin America, however, while PF has been widely measured, there is no accepted test battery, making it difficult to monitor and/or compare the PF levels of Latin children. The aim of this study, therefore, is to systematically review and potentially meta-analyse the peer-reviewed literature regarding the assessment of

PF in Latin American children and adolescents. Methods and analysis This systematic review and meta-analysis will follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols statement. The systematic literature search will be performed in MEDLINE, Scopus, SciELO, EMBASE, Cochrane Library, Web of Science, SPORTDiscus, LILACS and Latindex (Spanish) to locate articles published up to April 2021. Eligible studies will include both descriptive and analytic study designs. Meta-analyses are planned for sufficiently homogeneous PF outcomes with regard to statistical and methodological characteristics. Narrative syntheses are planned for PF outcomes that are considered to be too heterogeneous. The statistical program STATA V.15 will be used for meta-analyses, with subgroup analyses performed according to the characteristics of included studies. Ethics and dissemination This systematic review and meta-analysis protocol is designed to provide updated evidence on the PF of Latin American children and adolescents. Findings from this review may be useful for teachers, researchers and other professionals responsible for paediatric fitness and health promotion/surveillance. The results will be disseminated through peer-reviewed scientific publications, conferences, educational talks and infographics. PROSPERO registration number CRD42020189892. © Author(s) (or their employer(s)) 2021.

GÓMEZ-MORON, M.A, PALOMAR, T., CERQUEIRA ALVES, L., ORTIZ, P., VILARIGUES, M. y SCHIBILLE, N., 2021. Christian-Muslim contacts across the Mediterranean: Byzantine glass mosaics in the Great Umayyad Mosque of C & acute;ordoba (Spain). *Journal of Archaeological Science*, vol. 129, pp. 105370. ISSN 0305-4403. DOI 10.1016/j.jas.2021.105370.

Glass mosaic decorations were used throughout the medieval Mediterranean as a powerful medium to convey religious and political agendas, yet we know next to nothing about the source of the materials and the transmission of the necessary technical know-how. Mosaics are generally considered a Byzantine art form, not least due to their prominence in Byzantine church architecture and because medieval Islamic textual sources assert that the glass tesserae of some of the most important early mosques were of Byzantine origin. This article provides solid analytical evidence that glass used in the tenth-century mosaics of the Great Umayyad Mosque of Cordoba (Spain) came from Byzantium. Most of the tesserae have high boron contents, for which the only compositional match are Byzantine glasses made with raw materials from Asia Minor. In addition, some of the glass has a chemical fingerprint that suggests that it was prepared by mixing local raw materials with imported high boron glass, indicative of local mosaic glassmaking. Our study thus illustrates the value of analytical studies in re-assessing long-held assumptions about the making of mosaics as well as the movement of materials and people across cultural barriers. The presence of Byzantine materials and craftsmen in Cordoba demonstrates that Muslims and Christians were interacting the length of the Mediterranean, corroborating the close diplomatic ties between the Caliphate of Cordoba and the Byzantine Empire during the tenth century. Our findings further underscore the importance of glass in trade and diplomatic exchange, reflecting its cultural and economic value in the medieval world.

GUIJO PÉREZ, S., 2021. La Virgen de la Salud de San Isidoro en el grabado: Modelo de la propagandística devocional letífica de la ciudad de Sevilla. *Boletín de las cofradías de Sevilla*, no. 748, pp. 370-380. ISSN 1137-2893.

GUZMÁN FLUJA, V.C., 2021a. Automated justice: La preocupante tendencia hacia la justicia penal automatizada. *Derecho procesal: retos y transformaciones*. S.l.: Atelier, pp. 339-380. ISBN 9788418244445.

GUZMÁN FLUJA, V.C., 2021b. Consideraciones sobre el alcance objetivo y subjetivo de la Directiva UE 680/2016. *Nuevos postulados de la cooperación judicial en la Unión Europea: Libro homenaje a la Prof.ª Isabel González Cano*. S.l.: Tirant lo Blanch, pp. 821-893. ISBN 978-84-1378-121-1.

GUZMÁN FLUJA, V.C., 2021c. «In memoriam» Prof.ª Dr.ª María Isabel González Cano. *Nuevos postulados de la cooperación judicial en la Unión Europea: Libro homenaje a la Prof.ª Isabel González Cano*, S.l.: Tirant lo Blanch, pp. 33-37. ISBN 978-84-1378-121-1.

HERNÁNDEZ-JIMÉNEZ, B., RUIZ-GARZÓN, G., BEATO-MORENO, A. y OSUNA-GÓMEZ, R., 2021. A Better Approach for Solving a Fuzzy Multiobjective Programming Problem by Level Sets. *Mathematics*, vol. 9, no. 9, pp. 992. DOI 10.3390/math9090992.

In this paper, we deal with the resolution of a fuzzy multiobjective programming problem using the level sets optimization. We compare it to other optimization strategies studied until now and we propose an algorithm to identify possible Pareto efficient optimal solutions.

HERRERO, C. y VILLAR, A., 2021. Dealing with categorical data in a multidimensional context: The multidimensional balanced worth. *Social Science Research*, vol. 96, pp. 102561. ISSN 0049-089X. DOI 10.1016/j.ssresearch.2021.102561.

This paper presents an evaluation protocol that permits evaluating the relative performance of a set of populations in a multidimensional context when outcomes are measured in terms of categorical variables. This problem appears in many different fields, such as Medicine, Social Sciences, or Engineering. The key ingredient for this evaluation is comparing the likelihood of achieving higher performance levels in the different dimensions. This way of addressing this family of problems derives from extending the balanced worth (Herrero and Villar, 2018) to a multidimensional setting. This evaluation protocol is illustrated by means of

two empirical applications regarding life satisfaction in Europe and multidimensional poverty measurement in Spain.

HOENCAMP, C., DUDCHENKO, O., ELBATSH, A.M.O., BRAHMACHARI, S., RAAIJMAKERS, J.A., VAN SCHAIK, T., CACCIATORE, Á.S., CONTESSOTO, V.G., VAN HEESBEEN, R.G.H.P., VAN DEN BROEK, B., MHASKAR, A.N., TEUNISSEN, H., ST HILAIRE, B.G., WEISZ, D., OMER, A.D., PHAM, M., COLARIC, Z., YANG, Z., RAO, S.S.P., MITRA, N., LUI, C., YAO, W., KHAN, R., MOROZ, L.L., KOHN, A., ST. LEGER, J., MENA, A., HOLCROFT, K., GAMBETTA, M.C., LIM, F., FARLEY, E., STEIN, N., HADDAD, A., CHAUSS, D., MUTLU, A.S., WANG, M.C., YOUNG, N.D., HILDEBRANDT, E., CHENG, H.H., KNIGHT, C.J., BURNHAM, T.L.U., HOVEL, K.A., BEEL, A.J., MATTEI, P.-J., KORNBERG, R.D., WARREN, W.C., CARY, G., GÓMEZ-SKARMETA, J.L., HINMAN, V., LINDBLAD-TOH, K., PALMA, F.D., MAESHIMA, K., MULTANI, A.S., PATHAK, S., NEL-THEMAAT, L., BEHRINGER, R.R., KAUR, P., MEDEMA, R.H., VAN STEENSEL, B., DE WIT, E., ONUCHIC, J.N., DI PIERRO, M., AIDEN, E.L. y ROWLAND, B.D., 2021. 3D genomics across the tree of life reveals condensin II as a determinant of architecture type. *Science* [en línea], vol. 372, no. 6545. DOI 10.1126/science.abe2218.

We investigated genome folding across the eukaryotic tree of life. We find two types of three-dimensional (3D) genome architectures at the chromosome scale. Each type appears and disappears repeatedly during eukaryotic evolution. The type of genome architecture that an organism exhibits correlates with the absence of condensin II subunits. Moreover, condensin II depletion converts the architecture of the human genome to a state resembling that seen in organisms such as fungi or mosquitoes. In this state, centromeres cluster together at nucleoli, and heterochromatin domains merge. We propose a physical model in which lengthwise compaction of chromosomes by condensin II during mitosis determines chromosome-scale genome architecture, with effects that are retained during the subsequent interphase. This mechanism likely has been conserved since the last common ancestor of all eukaryotes. © 2021 American Association for the Advancement of Science. All rights reserved.

HOYOS-FLORES, J.R., RANGEL-COLMENERO, B.R., ALONSO-RAMOS, Z.N., GARCÍA-DÁVILA, M.Z., CRUZ-CASTRUITA, R.M., NARANJO-ORELLANA, J. y HERNÁNDEZ-CRUZ, G., 2021. The Role of Cholinesterases in Post-Exercise HRV Recovery in University Volleyball Players. *Applied Sciences-Basel*, vol. 11, no. 9, pp. 4188. DOI 10.3390/app11094188.

Some studies show interest in measuring heart rate variability (HRV) during post-exercise recovery. It is known that the parasympathetic system is relevant during this process, where one of the factors of this modulation is the interaction of acetylcholine and cholinesterases (ChE). However, the behavior of ChE and its relationship during recovery is little known; therefore, the objective of this study

was to analyze the behavior of ChE and its relationship with recovery evaluated in HRV indicators in volleyball players. An exercise protocol with long-term and intermittent high-intensity phases was applied in nine volleyball players. HRV measurements were made, and blood samples were drawn to evaluate the ChE before exercise and after 24 and 48 h post-exercise. The results show a modification of the variables after exercises with respect to the baseline values (ChE: 1818.4 +/- 588.75 to 2218.78 +/- 1101.58; RMSSD: 42.64 +/- 12.86 to 17.72 +/- 12.55 ($p < 0.05$); SS: 8.76 +/- 1.93 to 21.93 +/- 10.05 ($p < 0.01$); S/PS Ratio: 0.32 +/- 0.14 to 3.26 +/- 3.28 ($p < 0.01$)), as well as recovery after 24 and 48 h with respect to postexercise (ChE: 1608.81 +/- 546.88 ($p < 0.05$) and 1454.54 +/- 580.45 ($p < 0.01$); RMSSD: 43.83 +/- 24.50 and 46.18 +/- 33.22 ($p < 0.01$); SS; 10.93 +/- 5.16 and 11.86 +/- 4.32 ($p < 0.01$); S/PS Ratio: 0.46 +/- 0.32 and 0.50 +/- 0.28 ($p < 0.01$)). ChE correlations ($p < 0.001$) were found with moderate (SS: $r = 0.465$) and large (RMSSD: $r = -0.654$; S/PS Ratio: $r = 0.666$) HRV indexes. In conclusion, ChE modifications are related to changes in HRV showing a very similar behavior in the case of the study subjects.

HUNT GÓMEZ, C.I., 2021. Perspectivas desde las que impartir métodos de enseñanza de segundas lenguas: una propuesta a partir de una matriz DAFO. *Escenarios educativos investigadores: hacia una educación sostenible*.S.l.: Dykinson, pp. 511-520. ISBN 978-84-1377-301-8.

JANSEN, R.L.M., SANTANA-MOLINA, C., VAN DEN NOORT, M., DEVOS, D.P. y VAN DER KLEI, I.J., 2021. Comparative Genomics of Peroxisome Biogenesis Proteins: Making Sense of the PEX Proteins. *Frontiers in Cell and Developmental Biology*, vol. 9, pp. 654163. ISSN 2296-634X. DOI 10.3389/fcell.2021.654163.

PEX genes encode proteins involved in peroxisome biogenesis and proliferation. Using a comparative genomics approach, we clarify the evolutionary relationships between the 37 known PEX proteins in a representative set of eukaryotes, including all common model organisms, pathogenic unicellular eukaryotes and human. A large number of previously unknown PEX orthologs were identified. We analyzed all PEX proteins, their conservation and domain architecture and defined the core set of PEX proteins that is required to make a peroxisome. The molecular processes in peroxisome biogenesis in different organisms were put into context, showing that peroxisomes are not static organelles in eukaryotic evolution. Organisms that lack peroxisomes still contain a few PEX proteins, which probably play a role in alternative processes. Finally, the relationships between PEX proteins of two large families, the Pex11 and Pex23 families, were analyzed, thereby contributing to the understanding of their complicated and sometimes incorrect nomenclature. We provide an exhaustive overview of this important eukaryotic organelle.

KLIONER, S.A., MIGNARD, F., LINDEGREN, L., BASTIAN, U., MCMILLAN, P.J., HERNÁNDEZ, J., HOBBS, D., RAMOS-LERATE, M., BIERMANN, M., BOMBRUN, A., DE TORRES, A., GERLACH, E., GEYER, R., HILGER, T., LAMMERS, U., STEIDELMÜLLER, H., STEPHENSON, C.A., BROWN,

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Context. Gaia Early Data Release 3 (Gaia EDR3) provides accurate astrometry for about 1.6 million compact (QSO-like) extragalactic sources, 1.2 million of which have the best-quality five-parameter astrometric solutions. Aims. The proper motions of QSO-like sources are used to reveal a systematic pattern due to the acceleration of the solar systembarycentre with respect to the rest frame of the Universe. Apart

from being an important scientific result by itself, the acceleration measured in this way is a good quality indicator of the Gaia astrometric solution. Methods. Theeffect of the acceleration was obtained as a part of the general expansion of the vector field of proper motions in vector spherical harmonics (VSH). Various versions of the VSH fit and various subsets of the sources were tried and compared to get the most consistent result and a realistic estimate of its uncertainty. Additional tests with the Gaia astrometric solution were used to get a better idea of the possible systematic errors in the estimate. Results. Our best estimate of the acceleration based on Gaia EDR3 is (2.32 ± 0.16) × 10-10 m s-2 (or 7.33 ±0.51 km s-1 Myr-1) towards α = 269.1° ± 5.4°, δ = -31.6° ± 4.1°, corresponding to a proper motion amplitude of 5.05 ±0.35 μas yr-1. This is in good agreement with the acceleration expected from current models of the Galactic gravitational potential. We expect that future Gaia data releases will provide estimates of the acceleration with uncertainties substantially below 0.1 μas yr-1. © ESO 2021.

LAMA-MUNOZ, A., GÓMEZ-CARRETERO, A., RUBIO-SENENT, F., BERMÚDEZ-ORIA, A., MAYA, I., FERNÁNDEZ-BOLANOS, J.G., VIOQUE, B. y FERNÁNDEZ-BOLANOS, J., 2021. Inhibitory Effect of Olive Phenolic Compounds Isolated from Olive Oil By-Product on Melanosis of Shrimps. *Antioxidants*, vol. 10, no. 5, pp. 728. DOI 10.3390/antiox10050728.

Melanosis is an unsolved problem of the crustacean industry and the cause of great loss of value. This study investigates the effect of two potent, natural antioxidants isolated from olive waste (hydroxytyrosol, HT and 3,4-dihydroxyphenylglycol, DHPG) and three novel HT-derivatives containing selenium and sulfur (dihydroxytyrosyl diselenide, N-hydroxytyrosyl selenourea, and N-hydroxytyrosyl thiourea) on the prevention of melanosis in Atlantic ditch shrimp (Palaemonetes varians) during refrigerated storage. These results clearly demonstrate the positive inhibitory effect of DHPG and dihydroxytyrosyl diselenide on delaying melanosis in vivo, although this effect was not dose dependent. The effect was associated with a concomitant-inhibitory effect on tyrosinase activity in vitro. To our knowledge, so far no studies on the prevention of melanosis have been conducted on this small specie of shrimp which is available in large quantities at any time of the year at low cost. Studies with these promising compounds could then be extended to other more economically important species with a greater guarantee of success.

LEÓN, V.E.P., SÁNCHEZ, M.A.L. y GUERRERO, F.M.[a]., 2021. Central American and caribbean tourism destinations' competitiveness: A temporal approach. *PLoS ONE* [en línea], vol. 16, no. 5 May. DOI 10.1371/journal.pone.0252139.

This study presents a new method for measuring tourism destination competitiveness based on data covering a specific time span. Issues, such as the type of data gathered, tools and methods employed, and the size and number of destinations, are addressed, as is the consideration of a specified time period. The proposal is based on the information given by linear regression equations, which not only

enables the behaviour of destinations to be observed over time, but also facilitates their comparison. The data employed was from the period 2000-2019. Cluster Analysis was introduced to group destinations according to their performance. Moreover, various aggregation methods are proposed to obtain competitiveness rankings. A comparison between destinations was carried out using the non-aggregative and an aggregative approach. Certain destinations attained better positions than others that are considered as being more competitive in global international rankings. Five clusters were clearly identified. The results were consistent with the World Travel and Tourism Council outputs and underlined the importance attached to tourism development in the destinations from Central America and the Caribbean.. © 2021 Pérez León et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

LIU, Y.-R., ELDRIDGE, D.J., ZENG, X.-M., WANG, J., SINGH, B.K. y DELGADO-BAQUERIZO, M., 2021. Global diversity and ecological drivers of lichenised soil fungi. *New Phytologist*, ISSN 0028-646X. DOI 10.1111/nph.17433.

Lichens play crucial roles in sustaining the functioning of terrestrial ecosystems; however, the diversity and ecological factors associated with lichenised soil fungi remain poorly understood. To address this knowledge gap, we used a global field survey including information on fungal sequences of topsoils from 235 terrestrial ecosystems. We identified 880 lichenised fungal phylotypes across nine biomes ranging from deserts to tropical forests. The diversity and proportion of lichenised soil fungi peaked in shrublands and dry grasslands. Aridity index, plant cover and soil pH were the most important factors associated with the distribution of lichenised soil fungi. Furthermore, we identified Endocarpon, Verrucaria and Rinodina as some of the most dominant lichenised genera across the globe, and they had similar environmental preferences to the lichenised fungal community. In addition, precipitation seasonality and mean diurnal temperature range were also important in predicting the proportion of these dominant genera. Using this information, we were able to create the first global maps of the richness and the proportion of dominant genera of lichenised fungi. This work provides new insight into the global distribution and ecological preferences of lichenised soil fungi, and supports their dominance in drylands across the globe.

LOBO-CABRERA, F.J., PATTI, A., GOVANTES, F. y CUETOS, A., 2021. Polymer-induced microcolony compaction in early biofilms: A computer simulation study. *Physical Review E*, vol. 103, no. 5, pp. 052407. ISSN 2470-0045. DOI 10.1103/PhysRevE.103.052407.

Microscopic organisms, such as bacteria, have the ability of colonizing surfaces and developing biofilms that can determine diseases and infections. Most bacteria secrete a significant amount of extracellular polymer substances that are relevant for biofilm stabilization and growth. In this work, we apply computer simulation and perform experiments to investigate the impact of polymer size and

concentration on early biofilm formation and growth. We observe as bacterial cells formed loose, disorganized clusters whenever the effect of diffusion exceeded that of cell growth and division. Addition of model polymeric molecules induced particle self-assembly and aggregation to form compact clusters in a polymer size- and concentration-dependent fashion. We also find that large polymer size or concentration lead to the development of intriguing stripe-like and dendritic colonies. The results obtained by Brownian dynamic simulation closely resemble the morphologies that we experimentally observe in biofilms of a Pseudomonas Putida strain with added polymers. The analysis of the Brownian dynamic simulation results suggests the existence of a threshold polymer concentration that distinguishes between two growth regimes. Below this threshold, the main force driving polymer-induced compaction is the hindrance of bacterial cell diffusion, while collective effects play a minor role. Above this threshold, especially for large polymers, polymer-induced compaction is a collective phenomenon driven by depletion forces. Well above this concentration threshold, severely limited diffusion drives the formation of filaments and dendritic colonies.

LÓPEZ-GIL, J.F., GARCÍA-HERMOSO, A., BRAZO-SAYAVERA, J., LÓPEZ, P.J.T. y LUCAS, J.L.Y., 2021. Cardiorespiratory fitness as mediator of the relationship of recreational screen time on mediterranean diet score in schoolchildren. *International Journal of Environmental Research and Public Health* [en línea], vol. 18, no. 9. DOI 10.3390/ijerph18094490.

Background: Studies have reported the association between cardiorespiratory fitness and higher adherence to the Mediterranean diet as well as lower recreational screen time. Sim-ilarly, higher screen time has been negatively linked to a lower adherence to the Mediterranean diet. However, the mediator effect of cardiorespiratory fitness on the influence of screen time on adherence to the Mediterranean diet is still unknown. The aim of this study was two-fold: first, to assess the combined association of recreational screen time and cardiorespiratory fitness with adherence to Mediterranean diet among Spanish schoolchildren, and second, to elucidate whether the association between recreational screen time and adherence to the Mediterranean diet is mediated by cardiorespiratory fitness. Methods: A descriptive and cross-sectional study was conducted. A total of 370 schoolchildren aged 6–13 years from six schools in the Region of Murcia (Spain) were included. Results: The mediation analysis showed that once screen time and cardiorespiratory fitness were included together in the model, cardiorespiratory fitness was positively linked to adherence to the Mediterranean diet ($p = 0.020$) and although screen time remained negatively related to adherence to the Mediterranean diet, this association was slightly attenuated (indirect effect = −0.027; 95% CI = (−0.080, −0.002)). Conclusions: This research supports that cardiorespiratory fitness may reduce the negative association between screen time and Mediterranean dietary patterns. © 2021 by the authors. Licensee MDPI, Basel, Switzerland.

LORENTE GARCÍA, R., MARTÍN, C. y GUERRERO PUERTA, L., 2021. Revisión narrativa de la normativa referente a la FP Dual en España. *Estudios sobre innovación e investigación educativa*. S.l.: Dykinson, pp. 427-440. ISBN 978-84-1377-303-2.

LUCAS-BORJA, M.E., ANDIVIA, E., CANDEL-PEREZ, D., LINARES, J.C. y CAMARERO, J.J., 2021. Long term forest management drives drought resilience in Mediterranean black pine forest. *Trees-Structure and Function*, ISSN 0931-1890. DOI 10.1007/s00468-021-02143-6.

Key message Spanish black pine showed greater resilience and resistance, but generally lower recovery to drought events in managed than in unmanaged forest stands under Mediterranean humid climate. Drought negative effects on forest ecosystems are projected to increase under global warming all over the world. In this context, forest management can be an effective option for reducing drought impacts and increasing tree growth stability to extreme drought events. Here, we aim to evaluate black pine (Pinus nigra subsp. salzmannii) growth response to climatic variability and drought events in managed and unmanaged stands under similar Mediterranean climatic conditions. Drought events were identified using long-term climatic data, and basal area increments were calculated for 100-120-year old trees cored in managed and unmanaged plots. Results showed that tree size, temperature, and the interaction between management treatment and water availability significantly influenced tree growth. Basal area increment was reduced in response to the 1983, 1991, 1994-1995, 1999-2000 and 2005 drought events. Trees in managed plots showed lower growth reductions in response to drought than those located in unmanaged plots, probably experiencing higher competition for soil water, whereas the reverse happened under wet climate conditions. Black pines showed greater resilience and resistance, but generally lower recovery to drought events in managed than in unmanaged stands. Our results suggest that forest management enhances drought tolerance in black pine stands, which may help to ameliorate the negative impacts of global warming across Mediterranean forest ecosystems.

LUCENO, M., VILLAVERDE, T., IGNACIO MÁRQUEZ-CORRO, J., SÁNCHEZ-VILLEGAS, R., MAGUILLA, E., ESCUDERO, M., JIMÉNEZ-MEJÍAS, P., SÁNCHEZ-VILLEGAS, M., MIGUEZ, M., BENÍTEZ-BENÍTEZ, C., MUASYA, A.M. y MARTÍN-BRAVO, S., 2021. An integrative monograph of Carex section Schoenoxiphium (Cyperaceae). *Peerj*, vol. 9, pp. e11336. ISSN 2167-8359. DOI 10.7717/peerj.11336.

Carex section Schoenoxiphium (Cariceae, Cyperaceae) is endemic to the Afrotropical biogeographic region and is mainly distributed in southern and eastern Africa, with its center of diversity in eastern South Africa. The taxon was formerly recognized as a distinct genus and has a long history of taxonomic controversy. It has also an important morphological and molecular background in particular dealing with the complexity of its inflorescence and the phylogenetic relationships of its species. We here present a fully updated and integrative monograph of Carex

section Schoenoxiphium based on morphological, molecular and cytogenetic data. A total of 1,017 herbarium specimens were examined and the majority of the species were studied in the field. Previous molecular phylogenies based on Sanger-sequencing of four nuclear and plastid DNA regions and RAD-seq were expanded. For the first time, chromosome numbers were obtained, with cytogenetic counts on 44 populations from 15 species and one hybrid. Our taxonomic treatment recognizes 21 species, one of them herein newly described (C gordon-grayae). Our results agree with previous molecular works that have found five main lineages in Schoenoxiphium. We provide detailed morphological descriptions, distribution maps and analytical drawings of all accepted species in section Schoenoxiphium, an identification key, and a thorough nomenclatural survey including 19 new typifications and one nomen novum.

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NÚÑEZ, L., BALOG, Z., BARACHE, C., BARBATO, D., BARROS, M., BARSTOW, M.A., BARTOLOMÉ, S., BASSILANA, J.-L., BAUCHET, N., BAUDESSON-STELLA, A., BECCIANI, U., BELLAZZINI, M., BERNET, M., BERTONE, S., BIANCHI, L., BLANCO-CUARESMA, S., BOCH, T., BOMBRUN, A., BOSSINI, D., BOUQUILLON, S., BRAGAGLIA, A., BRAMANTE, L., BREEDT, E., BRESSAN, A., BROUILLET, N., BUCCIARELLI, B., BURLACU, A., BUSONERO, D., BUTKEVICH, A.G., BUZZI, R., CAFFAU, E., CANCELLIERE, R., CÁNOVAS, H., CANTAT-GAUDIN, T., CARBALLO, R., CARLUCCI, T., CARNERERO, M.I., CARRASCO, J.M., CASAMIQUELA, L., CASTELLANI, M., CASTRO SAMPOL, P., CHAOUL, L., CHARLOT, P., CHIAVASSA, A., COMORETTO, G., COOPER, W.J., CORNEZ, T., COWELL, S., CRIFO, F., CROSTA, M., CROWLEY, C., DAFONTE, C., DAPERGOLAS, A., DAVID, M., DAVID, P., DE LAVERNY, P., DE LUISE, F., DE MARCH, R., DE RIDDER, J., DE SOUZA, R., DE TEODORO, P., DE TORRES, A., DEL PELOSO, E.F., DEL POZO, E., DELGADO, A., DELISLE, J.-B., DI MATTEO, P., DIAKITE, S., DIENER, C., DISTEFANO, E., DOLDING, C., EAPPACHEN, D., ENKE, H., ESQUEJ, P., FABRE, C., FABRIZIO, M., FAIGLER, S., FEDORETS, G., FERNIQUE, P., FIENGA, A., FIGUERAS, F., FOURON, C., FRAGKOUDI, F., FRAILE, E., FRANKE, F., GAI, M., GARABATO, D., GARCIA-GUTIERREZ, A., GARCÍA-TORRES, M., GAVRAS, P., GERLACH, E., GEYER, R., GIACOBBE, P., GILMORE, G., GIRONA, S., GIUFFRIDA, G., GOMEZ, A., GONZALEZ-SANTAMARIA, I., GONZÁLEZ-VIDAL, J.J., GRANVIK, M., GUTIÉRREZ-SÁNCHEZ, R., GUY, L.P., HAUSER, M., HAYWOOD, M., HIDALGO, S.L., HILGER, T., HŁADCZUK, N., HOBBS, D., HOLLAND, G., HUCKLE, H.E., JASNIEWICZ, G., JONKER, P.G., JUARISTI CAMPILLO, J., JULBE, F., KARBEVSKA, L., KERVELLA, P., KHANNA, S., KOCHOSKA, A., KONTIZAS, M., KORDOPATIS, G., KORN, A.J., KOSTRZEWA-RUTKOWSKA, Z., KRUSZYŃSKA, K., LAMBERT, S., LANZA, A.F., LASNE, Y., LE CAMPION, J.-F., LE FUSTEC, Y., LEBRETON, Y., LEBZELTER, T., LECCIA, S., LECLERC, N., LECOEUR-TAIBI, I., LIAO, S., LICATA, E., LINDSTRØM, H.E.P., LISTER, T.A., LIVANOU, E., LOBEL, A., MADRERO PARDO, P., MANAGAU, S., MANN, R.G., MARCHANT, J.M., MARCONI, M., MARCOS SANTOS, M.M.S., MARINONI, S., MAROCCO, F., MARSHALL, D.J., MARTIN POLO, L., MARTÍN-FLEITAS, J.M., MASIP, A., MASSARI, D., MASTROBUONO-BATTISTI, A., MAZEH, T., MESSINA, S., MICHALIK, D., MILLAR, N.R., MINTS, A., MOLINA, D., MOLINARO, R., MOLNÁR, L., MONTEGRIFFO, P., MORBIDELLI, R., MOREL, T., MORRIS, D., MULONE, A.F., MUNOZ, D., MURPHY, C.P., MUSELLA, I., NOVAL, L., ORDÉNOVIC, C., ORRÙ, G., OSINDE, J., PAGANI, C., PAGANO, I., PALAVERSA, L., PALICIO, P.A., PANAHI, A., PAWLAK, M., PEÑALOSA ESTELLER, X., PENTTILÄ, A., PIERSIMONI, A.M., PINEAU, F.-X., PLACHY, E., PLUM, G., POGGIO, E., PORETTI, E., POUJOULET, E., PRŠA, A., PULONE, L., RACERO, E., RAGAINI, S., RAINER, M., RAITERI, C.M., RAMBAUX, N., RAMOS, P., RAMOS-LERATE, M., RE FIORENTIN, P., REGIBO, S., REYLÉ, C., RIVA, A., RIXON, G., ROBICHON, N., ROBIN, C., ROELENS, M., ROHRBASSER, L., ROWELL, N., ROYER, F., RYBICKI, K.A., SADOWSKI, G., SAGRISTÀ SELLÉS, A., SAHLMANN, J., SALGADO, J., SALGUERO, E., SAMARAS, N., GIMENEZ, V.S., SANNA, N., SANTOVEÑA, R., SARASSO, M., SCHULTHEIS, M., SCIACCA, E., SEGOL,

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Context. This work is part of the Gaia Data Processing and Analysis Consortium papers published with the Gaia Early Data Release 3 (EDR3). It is one of the demonstration papers aiming to highlight the improvements and quality of the newly published data by applying them to a scientific case. Aims. We use the Gaia EDR3 data to study the structure and kinematics of the Magellanic Clouds. The large distance to the Clouds is a challenge for the Gaia astrometry. The Clouds lie at the very limits of the usability of the Gaia data, which makes the Clouds an excellent case study for evaluating the quality and properties of the Gaia data. Methods. The basis of our work are two samples selected to provide a representation as clean as possible of the stars of the Large Magellanic Cloud (LMC) and the Small Magellanic Cloud (SMC). The selection used criteria based on position, parallax, and proper motions to remove foreground contamination from the Milky Way, and allowed the separation of the stars of both Clouds. From these two samples we defined a series of subsamples based on cuts in the colour-magnitude diagram; these subsamples were used to select stars in a common evolutionary phase and can also be used as approximate proxies of a selection by age. Results. We compared the Gaia Data Release 2 and Gaia EDR3 performances in the study of the Magellanic Clouds and show the clear improvements in precision and accuracy in the new release. We also show that the systematics still present in the data make the determination of the 3D geometry of the LMC a difficult endeavour; this is at the very limit of the usefulness of the Gaia EDR3 astrometry, but it may become feasible with the use of additional external data. We derive radial and tangential velocity maps and global profiles for the LMC for the several subsamples we defined. To our knowledge, this is the first time that the two planar components of the ordered and random motions are derived for multiple stellar evolutionary phases in a galactic disc outside the Milky Way, showing the differences between younger and older phases. We also analyse the spatial structure and motions in the central region, the bar, and the disc, providing new insightsinto features and kinematics. Finally, we show that the Gaia EDR3 data allows clearly resolving the Magellanic Bridge, and we trace the density and velocity flow of the stars from the SMC towards the LMC not only globally, but also separately for young and evolved populations. This allows us to confirm an evolved population in the Bridge that is slightly shift from the younger population. Additionally, we were able to study the outskirts of both Magellanic Clouds, in which we detected some well-known features and indications of new ones. © ESO 2021.

MACHUCA, C., CORREA-VELA, M., GARCÍA-NAVAS, D., DARLING, A., VILLALÓN-GARCÍA, I., SÁNCHEZ-ALCÁZAR, J.A., PÉREZ-DUEÑAS, B., ERCEG, S. y ESPINÓS, C., 2021. Generation of three human iPSC lines from PLAN (PLA2G6-associated neurodegeneration) patients. *Stem Cell Research* [en línea], vol. 53. DOI 10.1016/j.scr.2021.102338.

The human iPSC cell lines, PLANFiPS1-Sv4F-1 (RCPFi004-A), PLANFiPS2-Sv4F-1 (RCPFi005-A), PLANFiPS3-Sv4F-1 RCPFi006-A), derived from dermal fibroblast from three patients suffering PLAN (PLA2G6-associated neurodegeneration; MIM 256600) caused by mutations in the PLA2G6 gene, was generated by non-integrative reprogramming technology using OCT3/4, SOX2, CMYC and KLF4 reprogramming factors. The pluripotency was assessed by immunocytochemistry and RT-PCR. Differentiation capacity was verified in vitro. This iPSC line can be further differentiated toward affected cells to better understand molecular mechanisms of disease and pathophysiology. © 2021

MAESTRE, F.T., BENITO, B.M., BERDUGO, M., CONCOSTRINA-ZUBIRI, L., DELGADO-BAQUERIZO, M., ELDRIDGE, D.J., GUIRADO, E., GROSS, N., KEFI, S., LE BAGOUSSE-PINGUET, Y., OCHOA-HUESO, R. y SOLIVERES, S., 2021. Biogeography of global drylands. *New Phytologist*, ISSN 0028-646X. DOI 10.1111/nph.17395.

Despite their extent and socio-ecological importance, a comprehensive biogeographical synthesis of drylands is lacking. Here we synthesize the biogeography of key organisms (vascular and nonvascular vegetation and soil microorganisms), attributes (functional traits, spatial patterns, plant-plant and plant-soil interactions) and processes (productivity and land cover) across global drylands. These areas have a long evolutionary history, are centers of diversification for many plant lineages and include important plant diversity hotspots. This diversity captures a strikingly high portion of the variation in leaf functional diversity observed globally. Part of this functional diversity is associated with the large variation in response and effect traits in the shrubs encroaching dryland grasslands. Aridity and its interplay with the traits of interacting plant species largely shape biogeographical patterns in plant-plant and plant-soil interactions, and in plant spatial patterns. Aridity also drives the composition of biocrust communities and vegetation productivity, which shows large geographical variation. We finish our review by discussing major research gaps, which include: studying regular vegetation spatial patterns; establishing large-scale plant and biocrust field surveys assessing individual-level trait measurements; knowing whether the impacts of plant-plant and plant-soil interactions on biodiversity are predictable; and assessing how elevated CO2 modulates future aridity conditions and plant productivity.

MALVAREZ, G., FERREIRA, O., NAVAS, F., COOPER, J.A.G., GRACÍA-PRIETO, F.J. y TALAVERA, L., 2021. Storm impacts on a coupled human-natural coastal system: Resilience of developed coasts. *Science of the Total Environment*, vol. 768, pp. 144987. ISSN 0048-9697. DOI 10.1016/j.scitotenv.2021.144987.

Human occupation of and alteration of the world's coast has transformed large stretches of it into Coupled Human-Natural Systems (CHANS) in which humans both influence and are influenced by coastal evolution. In such systems, human activity is as critical on natural resilience as processes and sediment supply derived from the natural setting. Pre- and post-storm observations of these interactions on the intensively developed Atlantic coast of the Gulf of Cadiz, (Spain and Portugal) are examined to determine natural and engineering resilience. Three case studies are used in three CHANS, showing that human interventions interact in complex ways with the natural system influencing post-storm recovery. In natural coasts, storm impact is assessed in terms of geomorphological response; on developed coasts, it is quantified as damage to infrastructure or loss of amenity. Preparedness, availability of resources, choice of response and the speed at which human agencies respond affect resilience for post-storm beach behaviour. Results show in some sites natural resilience adjusting by post-storm sediment transfers and an equilibrium morphology that may differ from pre-storm morphology; engineering resilience ensured that CHANS regained their pre-storm human infrastructure and amenity. Their management requires a fundamentally different approach to that of natural coastlines. The current immature stage of understanding of CHANS (especially the human preparedness and response components) is illustrated by the case studies presented where short-term political decisions and reactions to storms play a strong role in post-storm response. The nature and extent of many developed coasts as CHANS is slowly becoming more widely acknowledged, but to increase natural resilience and decrease vulnerability in CHANS better planning is required so that future storms are anticipated and when they happen, pre-planned human response actions are activated. Storms are an integral and inevitable element in the behaviour of coastal CHANS, not a disaster or emergency. (C) 2021 Published by Elsevier B.V.

MANONELLES MARQUETA, P., FRANCO BONAFONTE, L., TERESA GALVÁN, C. de, VALLE SOTO, M. de, GAZTAÑAGA AURREKOETXEA, T. y GARCÍA-NIETO PORTABELLA, J.N., 2021. Atribuciones profesionales en el ejercicio para la salud de la Sociedad Española de Medicina del Deporte. *Archivos de medicina del deporte: revista de la Federación Española de Medicina del Deporte y de la Confederación Iberoamericana de Medicina del Deporte*, vol. 38, no. 202, pp. 120-126. ISSN 0212-8799.

The regular practice of physical exercise is extraordinarily effective in the management of a growing number of chronic diseases, some of them with a prevalence of pandemic magnitude, for which the society must assume the incorporation of physicalactivity as a health strategy to prevent and to serve as a complementary treatment of the disease. Not only medicine and physiotherapy play a fundamental role in the management of exercise for health but also, outside of health, Sports science and physical education degree is crucial in this field of work. From a health point of view, medicine and physiotherapy have a primary role in the management of exercise for health and also, outside of health, sports science and physical education degree occupy a very prominent role in the promotion and implementation of strategies for the promotion of health. These professions have been occupying a position in addressing this problem that, on some occasions, has

led to points of friction with respect to their role, responsibilities and function. On the other hand, there is a need to resolve the question of the professions' areas of competence while maintaining the will to simultaneously recognize the growing areas of competence shared interprofessionally and the highly relevant areas specific to each profession. This document is based on the need to address the incorporation of exercise in the prevention and management of disease in a solid and consistent way, considering the contribution of the professions involved from the perspective of multidisciplinary work and with a non-conflictual but cooperative, transparent and respectful collaboration. In addition, this collaboration should always aim at serving society in the most effective way possible, clearly defining the professional attributions of medicine, physiotherapy and physical activity and sport sciences in everything related to the use of exercise as a tool for health.

MÁRQUEZ-CORRO, J.I., MARTÍN-BRAVO, S., JIMÉNEZ-MEJÍAS, P., HIPP, A.L., SPALINK, D., NACZI, R.F.C., ROALSON, E.H., LUCENO, M. y ESCUDERO, M., 2021. Macroevolutionary insights into sedges (Carex: Cyperaceae): The effects of rapid chromosome number evolution on lineage diversification. *Journal of Systematics and Evolution*, ISSN 1674-4918. DOI 10.1111/jse.12730.

Changes in holocentric chromosome number due to fission and fusion have direct and immediate effects on genome structure and recombination rates. These, in turn, may influence ecology and evolutionary trajectories profoundly. Sedges of the genus Carex (Cyperaceae) comprise ca. 2000 species with holocentric chromosomes. The genus exhibits a phenomenal range in the chromosome number (2n = 10 - 132) with almost not polyploidy. In this study, we integrated the most comprehensive cytogenetic and phylogenetic data for sedges with associated climatic and morphological data to investigate the hypothesis that high recombination rates are selected when evolutionary innovation is required, using chromosome number evolution as a proxy for recombination rate. We evaluated Ornstein-Uhlenbeck models to infer shifts in chromosome number equilibrium and selective regime. We also tested the relationship between chromosome number and diversification rates. Our analyses demonstrate significant correlations between morphology and climatic niche and chromosome number in Carex. Nevertheless, the amount of chromosomal variation that we are able to explain is very small. We recognized a large number of shifts in mean chromosome number, but a significantly lower number in climatic niche and morphology. We also detected a peak in diversification rates near intermediate recombination rates. In combination, these analyses point toward the importance of chromosome evolution to the evolutionary history of Carex. Our work suggests that the effect of chromosome evolution on recombination rates, not just on reproductive isolation, may be central to the evolutionary history of sedges.

MARTÍ-GARCÍA, S., RELINQUE-MEDINA, F., FERNÁNDEZ-BORRERO, M.Á. y VÁZQUEZ-AGUADO, O., 2021. Structural and functional analysis of cases of family treatment treated in the public social services system. *Heliyon* [en línea], vol. 7, no. 5. DOI 10.1016/j.heliyon.2021.e06825.

The purpose of this work has been to analyze, from a structural and functional approach, the families at risk or unprotected by the Family Treatment Teams, inserted in the Public System of Social Services. For this purpose, qualitative research methods and techniques have been used on 26 interdisciplinary reports generated in the most representative cases of family intervention. Significant results have been obtained describing family structures, life-cycle adaptation, pattern repetition across generations, life events and family functioning, and linked patterns. The data reveal that these are families with common problems related mainly to the behaviour of minors and the coverage of basic needs. Negligence is the central element in this type of families as well as the maladjustment to the life cycle of the family system. All this from patterns of repetition linking dysfunctional. © 2021 The Author(s)

MARTÍN BERMÚDEZ, N. y LÓPEZ MEDIALDEA, A.M., 2021. Competencias docentes y formación del profesorado en la planificación de proyectos de aprendizaje-servicio. *Escenarios educativos investigadores: hacia una educación sostenible*. S.l.: Dykinson, pp. 1557-1568. ISBN 978-84-1377-301-8.

MARTÍNEZ BUJÁN, R., TABOADELA, O. y MORAL-ESPÍN, L. del, 2021. Experiencias colectivas de cuidados durante la infancia: dinámicas, debates y tensiones. *RES. Revista Española de Sociología*, vol. 30, no. 2, pp. 9- 0. ISSN 1578-2824. 10.22325/fes/res.2021.31

El objetivo de este artículo es analizar iniciativas de cuidados de menores en A Coruña que, organizadas por los propios progenitores, trascienden de las opciones públicas y privadas del entorno. Sus resultados se basan en una investigación cualitativa realizada durante los años 2018 y 2019 en la que se han aplicado las técnicas de análisis documental, observación, entrevistas en profundidad y talleres de discusión entre las investigadoras y las participantes. En concreto, se han recogido los discursos y narraciones de 15 personas que participan en actividades de cuidados cuyo fundamento es la colaboración mutua tanto en las tareas de crianza como en su gestión. El documento explora cómo emergen estas prácticas sociales que animan a la politización colectiva de los cuidados, cuál es la filosofía que las sostiene y cuáles son sus debates internos y contradicciones.

MELGAR-GARCÍA, L., GUTIÉRREZ-AVILÉS, D., RUBIO-ESCUDERO, C. y TRONCOSO, A., 2021. Discovering three-dimensional patterns in real-time from data streams: An online triclustering approach. *Information Sciences*, vol. 558, pp. 174-193. ISSN 0020-0255. DOI 10.1016/j.ins.2020.12.089.

Triclustering algorithms group sets of coordinates of 3-dimensional datasets. In this paper, a new triclustering approach for data streams is introduced. It follows a streaming scheme of learning in two steps: offline and online phases. First, the offline phase provides a summary model with the components of the triclusters.

Then, the second stage is the online phase to deal with data in streaming. This online phase consists in using the summary model obtained in the offline stage to update the triclusters as fast as possible with genetic operators. Results using three types of synthetic datasets and a real-world environmental sensor dataset are reported. The performance of the proposed triclustering streaming algorithm is compared to a batch triclustering algorithm, showing an accurate performance both in terms of quality and running times. (C) 2021 Elsevier Inc. All rights reserved.

MONTERO-CARRETERO, C., PASTOR, D., SANTOS-ROSA, F.J. y CERVELLO, E., 2021. School Climate, Moral Disengagement and, Empathy as Predictors of Bullying in Adolescents. *Frontiers in Psychology*, vol. 12, pp. 656775. ISSN 1664-1078. DOI 10.3389/fpsyg.2021.656775.

Our work aimed to study the relationships between different dimensions of school climate, moral disengagement, empathy, and bullying behaviors (perpetration and victimization). The study sample consisted of 629 students (304 boys and 325 girls) aged 12-14 years (M = 12.55, SD = 0.67). Results showed how different dimensions of school climate predicted moral disengagement, empathy, and victimization, and these, in turn, predicted bullying perpetration. The results show the need to generate favorable educational environments to reduce the levels of moral disengagement and victimization and to increase empathy in students as a strategy to prevent negative consequences related to bullying.

MONTORO SÁNCHEZ, J.A., 2021. El régimen jurídico del derecho a la protección de datos personales en la Administración de Justicia (Comentario al artículo 2.4 LOPDGDD). *Comentario al Reglamento General de Proteción de Datos y a la Ley Orgánica de Protección de Datos personales y Garantía de los Derechos Digitales*. S.l.: Aranzadi, pp. 477-507. ISBN 978-84-9197-925-8.

MOREDA, W., 2021. Proyecto OLEUM, un guiño a la confianza de los consumidores. *Mercacei magazine*, no. 107, pp. 208-211. ISSN 1134-7104.

MORILLAS, L., ROALES, J., CRUZ, C. y MUNZI, S., 2021. Resilience of Epiphytic Lichens to Combined Effects of Increasing Nitrogen and Solar Radiation. *Journal of Fungi*, vol. 7, no. 5, pp. 333. DOI 10.3390/jof7050333.

Lichens are classified into different functional groups depending on their ecological and physiological response to a given environmental stressor. However, knowledge on lichen response to the synergistic effect of multiple environmental factors is extremely scarce, although vital to get a comprehensive understanding of the effects of global change. We exposed six lichen species belonging to different functional groups to the combined effects of two nitrogen (N) doses and direct sunlight involving both high temperatures and ultraviolet (UV) radiation for 58

days. Irrespective of their functional group, all species showed a homogenous response to N with cumulative, detrimental effects and an inability to recover following sunlight, UV exposure. Moreover, solar radiation made a tolerant species more prone to N pollution's effects. Our results draw attention to the combined effects of global change and other environmental drivers on canopy defoliation and tree death, with consequences for the protection of ecosystems.

MUÑOZ-LÓPEZ, A., POZZO, M. y FLORIA, P., 2021. Real-time mechanical responses to overload and fatigue using a flywheel training device. *Journal of Biomechanics*, vol. 121, pp. 110429. ISSN 0021-9290. DOI 10.1016/j.jbiomech.2021.110429.

Purpose: This study aimed to analyze mechanical performance and mechanical losses across different sets and repetitions of unilateral leg extensions under flywheel loading conditions. Methods: In a cross-over design, 23 physically active participants executed 3 sets of 30 repetitions using two different loads. Angular speed, angular acceleration and power were monitored, and mean and peak values of these variables were calculated for each set of repetitions. We analyzed time-course differences every five repetitions (described as & lsquo;clusters & rsquo;). Differences in the mechanical profile for Load by Set and in the mechanical losses for Load by Set by Cluster repetitions were analyzed using an ANOVA repeated measures test. A Principal Components (PC) analysis was also conducted. Results: Only peak acceleration showed a significant Set by Load interaction ($p = 0.006$) in mechanical performance. At the intra-set level, all consecutive clusters showed a significant decrement in all variables, but with different magnitudes (speed < acceleration < power). Although all variables showed significant Set by Cluster and Load by Cluster interactions, only the acceleration variables showed a significant Set by Load interaction ($p < 0.05$). All the variables showed a single PC. Higher fatigue was found around the concentric peak for each variable. Conclusions: The most sensitive variable for detecting fatigue using real-time feedback seems to be the angular acceleration of the flywheel. Peak acceleration can be used to monitor training workload and training volume in real time in leg extension exercises using flywheel training devices. (c) 2021 Elsevier Ltd. All rights reserved.

NAVARRO ARDOY, L. y LÓPEZ MENCHÓN, A., 2021. La confianza en las instituciones del aparato de justicia penal: un recorrido por las medidas utilizadas en encuestas de seguridad ciudadana. *Aspectos sociales en la seguridad ciudadana*. S.l.: Dykinson, pp. 49-57. ISBN 978-84-1377-181-6.

NAVARRO, C.J., 2021. *Nuevos retos para las políticas urbanas: innovación, gobernanza, servicios municipales y políticas sectoriales*. S.l.: Tirant lo Blanch, pp., ISBN 9788418155666.

NGUYEN, T.L., NOKIN, M.-J., TERÉS, S., TOMÉ, M., BODINEAU, C., GALMAR, O., PASQUET, J.-M., ROUSSEAU, B., VAN LIEMPD, S., FALCON-PEREZ, J.M., RICHARD, E., MUZOTTE, E., REZVANI, H.-R., PRIAULT, M., BOUCHECAREILH, M., REDONNET-VERNHET, I., CALVO, J., UZAN, B., PFLUMIO, F., FUENTES, P., TORIBIO, M.L., KHATIB, A.-M., SOUBEYRAN, P., MURDOCH, P.D.S. y DURÁN, R.V., 2021. Downregulation of Glutamine Synthetase, not glutaminolysis, is responsible for glutamine addiction in Notch1-driven acute lymphoblastic leukemia. *Molecular Oncology*, vol. 15, no. 5, pp. 1412-1431. DOI 10.1002/1878-0261.12877.

The cellular receptor Notch1 is a central regulator of T-cell development, and as a consequence, Notch1 pathway appears upregulated in > 65% of the cases of T-cell acute lymphoblastic leukemia (T-ALL). However, strategies targeting Notch1 signaling render only modest results in the clinic due to treatment resistance and severe side effects. While many investigations reported the different aspects of tumor cell growth and leukemia progression controlled by Notch1, less is known regarding the modifications of cellular metabolism induced by Notch1 upregulation in T-ALL. Previously, glutaminolysis inhibition has been proposed to synergize with anti-Notch therapies in T-ALL models. In this work, we report that Notch1 upregulation in T-ALL induced a change in the metabolism of the important amino acid glutamine, preventing glutamine synthesis through the downregulation of glutamine synthetase (GS). Downregulation of GS was responsible for glutamine addiction in Notch1-driven T-ALL both in vitro and in vivo. Our results also confirmed an increase in glutaminolysis mediated by Notch1. Increased glutaminolysis resulted in the activation of the mammalian target of rapamycin complex 1 (mTORC1) pathway, a central controller of cell growth. However, glutaminolysis did not play any role in Notch1-induced glutamine addiction. Finally, the combined treatment targeting mTORC1 and limiting glutamine availability had a synergistic effect to induce apoptosis and to prevent Notch1-driven leukemia progression. Our results placed glutamine limitation and mTORC1 inhibition as a potential therapy against Notch1-driven leukemia. © 2020 The Authors. Molecular Oncology published by John Wiley & Sons Ltd on behalf of Federation of European Biochemical Societies.

ORTEGA DE MORA, F., TERRÓN-CARO, M.T. y CÁRDENAS-RODRÍGUEZ, R., 2021. El cruce de frontera de las mujeres migrantes. Los estudios en los cruces fronterizos México-EE.UU y África-Europa. *Políticas públicas en defensa de la inclusión, la diversidad y el género III: migraciones y derechos humanos*. S.l.: Universidad de Salamanca, pp. 179-188. ISBN 978-84-1311-467-5.

Currently, migratory movements are conditioned by border controls. Given the con-ditions of the prevailing globalized world, borders are conceived as a line that has to be defended (Núñez y Carrasco, 2005) to ensure the protection and development of the Na-tion-State, becoming the result of unequal relations of political power (Foucher, 1991). This document analyzes the academic works that address the border crossing of migrant women in the two currently busiest borders: Mexico-USA. and Africa-Europe. The me-aning and repercussion that the border has in our days, the different methodologies you use for border study in female migrations and the vulnerability that women suffer in both contexts are

exposed.Keywords: borders, female migration, vulnerability that women suffer in both contexts are exposed

ORTIZ ROLDÁN, J.M., 2021. *Computational design of nanostructured materials with renewable energy applications* [en línea]. Tesis doctoral. Sevilla: Universidad Pablo de Olavide [consulta: junio de 2021]. Disponible en: http://hdl.handle.net/10433/10151.

This thesis studies the viability of various materials as key pieces in the construction of thermosolar power plants as well as for the storage of solar energy. As these materials are exposed to extreme pressure and temperature cycles, it is important to study their behavior under these conditions. To do this, we have used different techniques with classical and quantum calculations at the molecular level. These calculations are essential to understand the structural behavior of materials as well as to design and predict the behavior of new materials. The purpose of the thesis is divided into two parts clearly related to each other: (1) to develop new methods to fit force fields of relevant materials in the energy plan, starting from the electronic density computed with DFT and avoiding the numerical dependence of the parameters of the potentials, and (2) design new nanostructured materials that can improve energy efficiency overcoming the adverse weather conditions of solar thermal power plants, using, where possible, models of force fields improved with our new methodology. The thesis is divided into six chapters covering the following topics: Chapter 1. In this chapter we begin with a summary of the thesis and continue presenting each and every one of the methods and materials used. We also present the theoretical basis behind this study, specific and detailed methodology as well as hardware and software specifications used for all analyzes. Chapter 2. We developed a new method to fit the parameters of an interatomic potential for nickel-chromium alloys, improving the prediction of the structural properties of these materials. To do this, we have designed an algorithm that carries out a series of iterations, in which the parameters of an existing potential are fitted, in order to optimize them based on a series of experimental observables. As an application, we study different structural properties of alloys with different concentrations of nickel-chromium, as well as nanoparticles of different sizes using the developed potential. We include at the end an example of the possible sintering of pairs of nanoparticles of this material. Chapter 3. We improve the fitting method developed in Chapter 2 and the prediction of the properties of metallic alloys. The improvement resides in the quantum study of the electron density of these materials, from which we fit the parameters of the classical potentials corresponding to said density. The use of ab-initio observables represents a qualitative advance, since obtaining the force fields is not subject to the value of the experimental observables. In addition, we expanded the composition of the metallic alloys studied by adding iron and molybdenum to the model, with the intention of getting as close as possible to the composition of INCONEL 625. Chapter 4. This chapter is the first of two focused on the search for new energetic materials. We have proposed, from a theoretical point of view, a new ordered nanoporous metal using as a model Metal-Organic Frameworks (MOFs), MOFs with modified ligands, zeolites and cristobalites, substituting SiO4 tetrahedra for supertetrahedra. The process is simple, using a program

written in FORTRAN, we have filled the pores of these materials with metal and we have removed the original structure. We have performed 100 nanosecond molecular dynamics at different temperatures to verify that the ordered nanoporous metals are stable. For these simulations, we have used some force fields from the literature in addition to those developed by us in the previous chapters. The predictive power of this study is useful from an experimental point of view, since it relates the limiting diameter of the pores as a function of the stability of the new materials. The diffusion of relevant molecules in various fields such as water and xylene is studied as an application of these materials. Chapter 5. We continue with the creation of new materials presenting one composed of cubic silicon carbide nanoparticles in an amorphous silicon matrix, as an alternative to metallic alloys, due to the high resistance of this type of ceramics to temperature changes. To do this, we have studied simple structures of cubic, hexagonal and amorphous silicon carbide with a series of potentials to determine which of them best models the structural properties compared to existing experiments. Once this was done, we studied two composite materials, (1) flat interfaces of cubic silicon carbide versus amorphous silicon and (2) nanoparticles arranged within matrices of amorphous silicon. We have studied both types with different sizes to observe their behavior based on their densities. This study was complemented on the microscopic and macroscopic scale. On the first one, the mechanical properties of these materials were studied by performing microstructural lattice simulations. On the second one, to complete the upscaling approach, we have created ceramic tubes for receivers of thermo-solar power plants, seeing their temperature distribution based on their thickness. Chapter 6. We discuss the conclusions of the study carried out and focus on the directions this work could take in the future.

PABLO SERRANO, A. de, 2021. Estigmatización del inmigrante y matrimonios forzados. *Políticas públicas en defensa de la inclusión, la diversidad y el género III: migraciones y derechos humanos*, S.l.: Universidad de Salamanca, pp. 815-826. ISBN 978-84-1311-467-5.

El legislador español incorporó en la reforma del Código Penal del año 2015 el delito de matrimonios forzados, siguiendo la dirección existente entre los países europeos, que, desde el Convenio de Estambul de 2011, apostaron decididamente por tipificar esta conducta. En este trabajo sostenemos que este delito no está justificado en la necesidad sino en otro objetivo: estigmatizar al inmigrante y a determinados grupos culturales que realizan estas prácticas culturales nocivas. Por el contrario, en lugar de esta solución punitivista rápida y fácil, una sociedad responsable debería afrontar tal problema con una política social amplia y no con medidas de Derecho penal simbólico.

PARRA RUIZ, G., 2021. Fiscalidad ambiental en el ámbito local (brainstorming medioambiental para las entidades locales). *Carta tributaria. Revista de opinión*, no. 74, pp. 3- 0. ISSN 2443-9843.

Local corporations timidly begin to explore the possibilities of environmental taxation,

greatly diminished by the limited scope for action allowed by Royal Legislative Decree 2/2004, of March 5, which approves the revised text of the Regulatory Law Local Treasuries and also due to the need for financial resources in times of crisis such as those we have suffered since 2008, now encouraged by COVID-19, circumstances that do not favor the interest in rewarding or rewarding environmentally friendly behaviors that entail positive externalities for the rest of society, above meeting their own immediate needs. In terms of percentages of GDP, Spain is ranked 25th in the EU environmental tax ranking -28 (the UK had not yet left).

PEJENAUTE-OCHOA, M.D., SANTANA-MOLINA, C., DEVOS, D.P., IBEAS, J.I. y FERNÁNDEZ-ÁLVAREZ, A., 2021. Structural, Evolutionary, and Functional Analysis of the Protein O-Mannosyltransferase Family in Pathogenic Fungi. *Journal of Fungi*, vol. 7, no. 5, pp. 328. DOI 10.3390/jof7050328.

Protein O-mannosyltransferases (Pmts) comprise a group of proteins that add mannoses to substrate proteins at the endoplasmic reticulum. This post-translational modification is important for the faithful transfer of nascent glycoproteins throughout the secretory pathway. Most fungi genomes encode three O-mannosyltransferases, usually named Pmt1, Pmt2, and Pmt4. In pathogenic fungi, Pmts, especially Pmt4, are key factors for virulence. Although the importance of Pmts for fungal pathogenesis is well established in a wide range of pathogens, questions remain regarding certain features of Pmts. For example, why does the single deletion of each pmt gene have an asymmetrical impact on host colonization? Here, we analyse the origin of Pmts in fungi and review the most important phenotypes associated with Pmt mutants in pathogenic fungi. Hence, we highlight the enormous relevance of these glycotransferases for fungal pathogenic development.

PERAZA-BALDERRAMA, J.N., VALDÉS-CUERVO, Á.A., MARTINEZ-FERRER, B., REYES-RODRÍGUEZ, A.C. y PARRA-PÉREZ, L.G., 2021. Assessment of a Multidimensional School Collective Efficacy Scale to Prevent Student Bullying: Examining Dimensionality and Measurement Invariance. *Psychosocial Intervention*, vol. 30, no. 2, pp. 101-111. ISSN 1132-0559. DOI 10.5093/pi2021a2.

The construct of a school collective efficacy to prevent bullying has attracted attention as a way to increase a positive, school-wide climate. The current study tested the fit of several first-order models of school collective efficacy to prevent (uni-dimensional, two-dimensional, and three-dimensional) bullying using a sample of 579 male (M-age = 14.31, SD = 1.78 years old) and 589 female (M-age = 14.56, SD = 1.83 years old) Mexican adolescents. The models were validated by the extent to which the model was invariant by gender and by educational level (secondary vs. high school). Moreover, the discriminant and concurrent validity of model dimensions were examined through their relationships with other constructs. The results suggest that school collective efficacy is a three-

dimensional construct, with supporting evidence for cohesion, students' social control, and teachers' social control dimensions. Measurement invariance was found in this three-dimensional measurement model by gender and educational level. The latent means difference analysis showed some differences by gender and educational level on factors of school collective efficacy. Finally, results support our hypotheses related to discriminant and concurrent validity in relation to external variables. Overall, findings indicate this three-dimensional model is useful to measure adolescents' perceptions of school collective efficacy.

PEREA-RODRÍGUEZ, M.-J., MORÓN-MARCHENA, J.-A., MUÑOZ-DÍAZ, M.-C. y COBOS-SANCHIZ, D., 2021. Adult Education: A Sustainable Model for the Reduction of Psychosocial and Educational Risks Caused by COVID-19. *Sustainability*, vol. 13, no. 9, pp. 5264. DOI 10.3390/su13095264.

Education for health and sustainability has to be understood from a new perspective beyond the traditional conceptual limits. Thus, following the lines of the 2030 sustainable development goals, we examine how permanent education and adult education can become a fundamental element for the achievement of said objectives, serving as a neutraliser of psychosocial risk factors. In other words, a quality education throughout life becomes a dynamic factor for the development of lifestyle habits and healthy aging, purposes that during the pandemic and the state of alarm have been altered by confinement, closure of educational centres, and methodological changes. The objective of the study is to analyse whether the maintenance of educational activity has influenced the psychological state of people, reducing, neutralising, or increasing the psychosocial risk factors linked to confinement and the evolution of COVID-19. For this, an observational study was developed, taking as a case the Universidad Popular Dos Hermanas (Seville, Spain), with a sample of 384 learners over the age of 16 years. The variables considered were sociodemographic means and technical tools, assessment of the institution, teacher assessment, and psychosocial variables related to possible effects caused by the context. The data were collected through a self-developed questionnaire. Descriptive analyses and bivariate correlations were carried out. Methodological diversity and positive correlations were shown in terms of the institution's function, teaching assessment, maintenance of activity, and reduction of psychopathological risks.

PÉREZ LEÓN, V.E., GUERRERO CASAS, F.M. y CABALLERO FERNÁNDEZ, R., 2021. *Study of the Caribbean tourism destinations' competitiveness through composite indicators* [en línea]. Tesis doctoral. Sevilla: Universidad Pablo de Olavide [consulta: junio de 2021]. Disponible en: http://hdl.handle.net/10433/10102

Tourism is frequently viewed as an important engine for the economic growth and development for both, developed and developing countries. Consequently, the number of new tourist products and markets is constantly rising worldwide. Therefore, the competence among tourism destinations in attracting more visitors and investors is also on the rise. As a result, tourism destination competitiveness

has become a principal topic in the field of tourism research and its importance has augmented the debate regarding its definition and measurement tools. In this respect, the present research aims to propose new feasible and reliable tools to measure the competitiveness of the tourism destinations of the Caribbean region, which is one of the most intensely and tourism-dependent regions worldwide. To this end, a variety of studies are presented towards the proposal of composite indicators to measure this phenomenon. Certain comprised techniques are based on mathematical procedures that strive to guarantee the higher explanatory power of the global measures proposed. Furthermore, they attempt to overcome those aspects that have been criticised of the Travel and Tourism Competitiveness Index of the World Economic Forum. The present studies analysed tourism competitiveness from either two perspectives, and propose static and dynamic measures A total of 33 destinations are included, almost twice the number of countries from the region included within the editions of the Travel and Tourism Competitiveness Report. Furthermore, diverse sets of indicators have been employed. The results of the static measures demonstrate the feasibility of the proposed methodologies the measurement of tourism destination competitiveness and its closeness to the World Travel and Tourism Competitiveness Index. First, the proposed methods enable all the information provided by the World Economic Forum to be utilized. Additionally, less information can be employed to attain results close to those provided by the Global International ranking. This is a major finding that may lead to the inclusion of developing countries into the Travel and Tourism Competitiveness Index. The dynamic methods developed herein attain outputs consistent with the predictions of the World Travel and Tourism Council. The analysis comprised all the available information within a given time span and, therefore, the intermediate scores influenced the results. Moreover, the dynamic indicator provides a detailed information regarding the change in competitiveness over time of a tourism destination and enables the cause of the improvement in the level of competitiveness to be determined, whether it be due to internal improvement of its performance or to changes relative to external issues.

PÉREZ LEÓN, V.E., PÉREZ, F., CONTRERAS RUBIO, I. y GUERRERO, F.M., 2021. An approach to the travel and tourism competitiveness index in the Caribbean region. *International Journal of Tourism Research*, vol. 23, no. 3, pp. 346-362. DOI 10.1002/jtr.2411.

This study aims to propose an index for measuring tourism destination competitiveness in the Caribbean Region. The application purpose is to fill the absence of Caribbean destinations in international rankings. Thirty three destinations and 27 indicators were considered, grouped into the 4 sub-indexes of the Travel and Tourism Competitiveness Index. The application was based on Goal Programming and Data Envelopment Analysis. Four dimensional rankings and a global rank were established as a useful tool for policy makers. The results demonstrate the proposal's explanatory power and methodological improvements in building composite indicators to measure the competitiveness of destinations. © 2020 John Wiley & Sons Ltd

PÉREZ VEGA, Á., 2021. Una visión crítica de la proyectada reforma del juicio verbal en el Anteproyecto de Ley de Medidas de Eficiencia Procesal del Servicio Público de Justicia: «Puede seguramente afirmarse que una justicia tardíamente concedida equivale a una falta de tutela. *Diario La Ley*, no. 9841, pp. 1- 0. ISSN 1989-6913.

Las modificaciones proyectadas en el Anteproyecto de la Ley de Medidas de Eficiencia Procesal del Servicio Público de Justicia en la tramitación del juicio verbal, lejos de convertirlo en el pregonado procedimiento rápido, ágil y sencillo, lo van a transformar, precisamente, en un procedimiento escrito, lento y con cierta complejidad, en el que las partes se van a cruzar escritos de distinto alcance y contenido. En la práctica, la reforma conseguirá el resultado contrario al pretendido, pues convertirá el juicio verbal en un procedimiento más complejo que el actual, con el consiguiente incremento de la carga de trabajo de los Tribunales de primera instancia.

PÉREZ-ALFONSO, D., LOPEZ-LOPEZ, M., LÓPEZ-CORNEJO, P., ROMERO-AZOGIL, L., BENITO, E., GARCIA-MARTIN, M. de G., GARCÍA-CALDERÓN, C.B., ROSADO, I.V., BALESTRA, F.R., HUERTAS, P., GARCÍA-CALDERÓN, M. y MOYA, M.L., 2021. Properties of polyplexes formed between a cationic polymer derived from l-arabinitol and nucleic acids. *New Journal of Chemistry*, ISSN 1144-0546. DOI 10.1039/d1nj00606a.

In this work a sugar-based cationic polymer derived from l-arabinitol, PUArab, was prepared and its interactions with the linear calf thymus DNA and with the circular plasmid pEGFP-C1 were investigated at different N/P ratios. The polyplexes were characterized by using several techniques. For both nucleic acids, a charge inversion was observed, together with a conformational change from a coiled structure to a more compacted one. However, the N/P ratio required to observe the DNA condensation depended on the nucleic acid architecture. PUArab presents low toxicity in several cell lines. The transfection efficiency, TE, of the PUArab/pEGFP-C1 polyplexes was investigated at several N/P ratios in order to study their potential as vectors in gene transfection.

PÉREZ-MARTÍNEZ, A., FERRERAS, C., MORA-RILLO, M., GUERRA, P., PASCUAL-MIGUEL, B., MESTRE-DURAN, C., BOROBIA, A.M., CARCAS, A., QUIROGA, J., GARCÍA, I., SANCHEZ-ZAPARDIEL, E., GASIOR, M., DE PAZ, R., MARCOS, A., VICARIO, J.L., BALAS, A., EGUIZABAL, C., SOLANO, C., ARRIBAS, J.R., DE MIGUEL, R., MONTEJANO, R. y SORIA, B., 2021. A phase I/II dose-escalation single center study to evaluate the safety of infusion of memory T cells as adoptive therapy in coronavirus pneumonia and/or lymphopenia (release). *Cytotherapy*, vol. 23, no. 5, pp. S29-S29. ISSN 1465-3249.

PONTÓN ARICHA, T., 2021. A star is born: ¿un nuevo Derecho Financiero y Tributario? *Retos del derecho financiero y tributario ante los desafíos de la economía digital*

y la inteligencia artificial. S.l.: Tirant lo Blanch, pp. 631-643. ISSN 9788413556673.

POZO CUEVAS, F., 2021. La medición del punitivismo a través de encuestas. *Aspectos sociales en la seguridad ciudadana*. S.l.: Dykinson, pp. 41-48. ISBN 978-84-1377-181-6.

POZO, D., 2021. Cell-based drug delivery harnesses inflammatory and autoimmune responses in neurodegeneration. *Journal of Molecular Medicine*, vol. 99, no. 5, pp. 673-674. DOI 10.1007/s00109-021-02059-1.

PRADAS GARCÍA, M., 2021. La innovación docente en la enseñanza de hockey en la época Covid. *Nuevos escenarios educativos: hacia el Horizonte 2030*. S.l.: Dykinson, pp. 840-848. ISBN 978-84-1377-360-5.

REIGAL, R.E., PÁEZ-MALDONADO, J.A., PASTRANA-BRINCONES, J.L., MORILLO-BARO, J.P., HERNÁNDEZ-MENDO, A. y MORALES-SÁNCHEZ, V., 2021. Physical activity is related to mood states, anxiety state and self-rated health in covid-19 lockdown. *Sustainability (Switzerland)* [en línea], vol. 13, no. 10. DOI 10.3390/su13105444.

The main goal of this research is to study the relationships between physical activity, mood states and self-rated health in the Spanish lockdown (March 2020–April 2020) due to the state of alarm caused by COVID-19. The participants were 328 people aged between 19 and 59 years (M = 37.06; SD = 10.82). Females comprised 63.70% of the participants, and 36.30% were male. An associative, comparative and predictive design was used in this research. The International Physical Activity Questionnaire (IPAQ), the Profile of Mood State (POMS), the state anxiety scale of the State-Trait Anxiety Questionnaire (STAI) and the General Health Questionnaire GHQ−12 were applied in order to measure the study variables. Both correlation and linear regression analyses were performed, showing that physical activity is positively related to health perception and mood. Similarly, data have shown that moderate physical practice predicts better health perceptions and positive mood states than vigorous physical activity. Specifically, moderate physical activity is the only variable that predicts the anxiety state (R = 0.22; R2adjusted = 0.05; F = 15.51; p < 0.001). In addition, it has been detected that mood is related to the perception of the state of health. Outcomes suggest that practicing moderate physical activity during these types of situations could amortize its negative effects on psychological health and benefit a more positive mental state. Future studies should consider the employment status of the sample to detect possible differences based on this variable. © 2021 by the authors. Licensee MDPI, Basel, Switzerland.

RODRÍGUEZ-IZQUIERDO, R.M., 2021. Does service learning affect the development of intercultural sensitivity? A study comparing students' progress in two different methodologies. *International Journal of Intercultural Relations*, vol. 82, pp. 99-108. ISSN 0147-1767. DOI 10.1016/j.ijintrel.2021.03.005.

Numerous studies have highlighted Intercultural Sensitivity (IS) as a key competence in an increasingly multicultural society. This study examined the extent to which a cohort of first year undergraduate students enrolled on the same Didactics course, and in two different training modalities - Service Learning (SL) and non-Service Learning (non-SL) - developed IS. It was based on a quasi-experimental design of repeated pre-test and post-test measures, comparing the two groups. The sample consisted of 233 Spanish students at higher education institutions, and data was collected using the Intercultural Development Inventory (IDI). The SL group displayed significantly higher levels of IS in all factors except in the denial/defence and minimization stages. Results indicated the effectiveness of SL regarding specific subscales within the IDI instrument. The findings add new depth to our understanding regarding which teaching methodologies contribute to the development of IS and to the training of active citizens in Spanish university students. The discussion focuses on the need for intercultural service experiences to promote IS. The results have broad implications for policymakers and educators who are interested in enhancing transformative educational experiences and effective teaching methodologies for developing students' IS in higher education.

RODRÍGUEZ-IZQUIERDO, R.M., 2021. Monolingual ideologies of Andalusian teachers in the multilingual schools' context. *International Journal of Bilingual Education and Bilingualism*, ISSN 1367-0050. DOI 10.1080/13670050.2021.1918627.

This article examines Andalusian teachers' ideologies towards migrant students' bilingualism and, the way teachers perceive the home language maintenance and its use in the school context. The data was collected through semi-structured interviews to two types of teachers -specialist language and regular teachers- in Andalusia (Spain). Findings revealed that were slight differences in the ideologies of these two types of teachers. In general, teachers' beliefs towards bilingualism were relatively positive. In rhetoric, language teachers demonstrated a greater appreciation for the bilingualism of the students and viewed it as a challenge. Conversely, the regular teachers had a less positive orientation towards bilingualism, associating it with problems. Furthermore, teachers advocate assimilationist language ideologies that consider - Spanish-only- as an indispensable tool for academic achievement. Our results also highlight that participants did not seem to be aware of the importance of students' home language-as-a right and its use as a democratic condition in a multilingual society such as Spain. The results show a need for professional development for all teachers to move away from monolingualism to advocating for multilingualism to better reflect the realities of the classrooms.

RODRÍGUEZ-ROSELL, D., MARTÍNEZ-CAVA, A., YÁÑEZ-GARCÍA, J.M., HERNÁNDEZ-BELMONTE, A., MORA-CUSTODIO, R., MORÁN-NAVARRO, R., PALLARÉS, J.G. y GONZÁLEZ-BADILLO, J.J., 2021. Linear programming produces greater, earlier and uninterrupted neuromuscular and functional adaptations than daily-undulating programming after velocity-based resistance training. *Physiology and Behavior* [en línea], vol. 233. DOI 10.1016/j.physbeh.2021.113337.

This study aimed to compare the effect of linear (LP) and daily-undulating (DUP) programming models on neuromuscular and functional performance using the velocity-based resistance training (VBRT) approach. Thirty-two resistance trained men were randomly assigned into 2 groups: LP (n = 16) or DUP (n = 16). Both training groups completed an 8-week VBRT intervention using the full squat exercise, only differing in the relative intensity (% 1RM) distribution during the training program. Changes produced by each periodization model were evaluated using the following variables: estimated 1RM; average mean propulsive velocity (MPV) attained for all absolute loads common to Pre-test and Post-test; average MPV attained against absolute loads lifted faster than 1 m•s−1; average MPV attained against absolute loads lifted slower than 1 m•s − 1; countermovement jump (CMJ) and fatigue test. Moreover, CMJ and 1RM parameters were evaluated weekly to analyze their evolution along the training program. LP and DUP strategies significantly improved all performance variables analyzed (p<0.001), except the fatigue test in the DUP group. Significant "time x group" interactions were observed in all strength variables and fatigue test in favour of the LP group. In addition, pre-post effect size (ES), percentages of change and weekly comparisons showed higher improvements in the LP group (ES=0.54–2.49, Δ=9.5–60.4%) compared to DUP (ES=0.40–1.65, Δ=5.5–27.2%). Based on these findings, the LP appears to stand as a more effective strategy than DUP to achieve greater, earlier and uninterrupted neuromuscular and functional adaptations in VBRT interventions. © 2021

RODRÍGUEZ-ROSELL, D., YÁÑEZ-GARCÍA, J.M., MORA-CUSTODIO, R., SÁNCHEZ-MEDINA, L., RIBAS-SERNA, J. y GÓNZALEZ-BADILLO, J.J., 2021. Effect of velocity loss during squat training on neuromuscular performance. *Scandinavian Journal of Medicine & Science in Sports*, ISSN 0905-7188. DOI 10.1111/sms.13967.

This study aimed to compare the effects of three resistance training (RT) programs differing in the magnitude of velocity loss (VL) allowed in each exercise set: 10%, 30%, or 45% on changes in strength, vertical jump, sprint performance, and EMG variables. Thirty-three young men were randomly assigned into three experimental groups (VL10%, VL30%, and VL45%; n = 11 each) that performed a velocity-based RT program for 8 weeks using only the full squat exercise (SQ). Training load (55-70% 1RM), frequency (2 sessions/week), number of sets (3), and inter-set recovery (4 min) were identical for all groups. Running sprint (20 m), countermovement jump (CMJ), 1RM, muscle endurance, and EMG during SQ were assessed pre- and post-training. All groups showed significant (VL10%: 6.4-58.6%; VL30%: 4.5-66.2%; VL45%: 1.8-52.1%; p < 0.05-0.001)

improvements in muscle strength and muscle endurance. However, a significant group x time interaction ($p < 0.05$) was observed in CMJ, with VL10% showing greater increments (11.9%) than VL30% and VL45%. In addition, VL10% resulted in greater percent change in sprint performance than the other two groups (VL10%: -2.4%; VL30%: -1.8%; and VL45%: -0.5%). No significant changes in EMG variables were observed for any group. RT with loads of 55-70% 1RM characterized by a low-velocity loss (VL10%) provides a very effective and efficient training stimulus since it yields similar strength gains and greater improvements in sports-related neuromuscular performance (jump and sprint) compared to training with higher velocity losses (VL30%, VL45%). These findings indicate that the magnitude of VL reached in each exercise set considerably influences the observed training adaptations.

ROMERO-MUÑIZ, C., ORTEGA, M., VILHENA, J.G., PÉREZ, R., CUEVAS, J.C. y ZOTTI, L.A., 2021. The Role of Metal Ions in the Electron Transport through Azurin-Based Junctions. *Applied Sciences-Basel*, vol. 11, no. 9, pp. 3732. DOI 10.3390/app11093732.

We studied the coherent electron transport through metal-protein-metal junctions based on a blue copper azurin, in which the copper ion was replaced by three different metal ions (Co, Ni and Zn). Our results show that neither the protein structure nor the transmission at the Fermi level change significantly upon metal replacement. The discrepancy with previous experimental observations suggests that the transport mechanism taking place in these types of junctions is probably not fully coherent.

SALAS-VALLINA, A., ALEGRE, J. y LÓPEZ-CABRALES, Á., 2021. The challenge of increasing employees' well-being and performance: How human resource management practices and engaging leadership work together toward reaching this goal. *Human Resource Management*, vol. 60, no. 3, pp. 333-347. DOI 10.1002/hrm.22021.

Despite continuing interest in employees' well-being, there are still large gaps in our understanding of the mediating role this concept plays in the human resource management (HRM)–performance relationship. In addition, more insights as to how HRM is implemented by leaders are required, as studies largely center either on leadership or on HRM, with little research addressing how HRM and leadership jointly determine employees' well-being and performance. This study examines the link between well-being-oriented human resource management (WBHRM) and performance in a sample of very large organizations, based on the job demands–resource model and social exchange theory. In addition, we explore the moderating role of middle managers' leadership in the relationship between WBHRM and employees' well-being. The results reveal that engaging leadership behavior fosters genuine implementation of WBHRM and has a direct impact on employees' performance. © 2020 Wiley Periodicals LLC.

SÁNCHEZ GÓMEZ, R., 2021a. El ejercicio del derecho de defensa ante la emisión, reconocimiento o ejecución de una orden europea de investigación. *Nuevos postulados de la cooperación judicial en la Unión Europea: Libro homenaje a la Prof.ª Isabel González Cano*. S.l.: Tirant lo Blanch, pp. 623-642. ISBN 978-84-1378-121-1.

SÁNCHEZ GÓMEZ, R., 2021b. El tratamiento procesal de la discriminación por razón de enfermedad infectocontagiosa en el marco de las relaciones de trabajo. *Trabajo y derecho: nueva revista de actualidad y relaciones laborales*, no. 77, pp. 5- 0. ISSN 2386-8090.

La normativa laboral aplicable establece unos parámetros razonables que permiten equilibrar el derecho a la intimidad y la prohibición de discriminación en relación con el derecho a la salud en el marco de la prestación del trabajo. La premisa de partida refiere un ámbito de protección adecuado en materia de salud que permita excluir posibles riesgos para el trabajador y su propio entorno laboral en el desarrollo del empleo, así como, se propone una reformulación jurisprudencial reconociendo la enfermedad, bajo determinadas condiciones, como una posible causa de discriminación. Por último, aunque el planteamiento fáctico que pudiera someterse a conocimiento jurisdiccional no es lineal, produciéndose no pocas realidades tangenciales entre posibles vulneraciones de legalidad ordinaria y situaciones discriminatorias, las normas que permiten delimitar el procedimiento aplicable y la traslación entre procedimientos de las garantías procesales previstas frente a eventuales vulneraciones de derechos fundamentales, así como, las posibilidades de alegación y prueba respecto del supuesto de hecho planteado, permiten afirmar una adecuada protección frente a la discriminación por razón de enfermedad en el ámbito de las relaciones de trabajo.

SANCHO NORIEGA, C., PÉREZ DE GUZMÁN, V., CÁRDENAS-RODRÍGUEZ, R. y CHÁVEZ SANTOS, R., 2021. Estrategia para la adaptabilidad del proceso de evaluación por competencias y el desarrollo de competencias genéricas en la Formación Profesional. *Nuevos escenarios educativos: hacia el Horizonte 2030* S.l.: Dykinson, pp. 1013-1023. ISBN 978-84-1377-360-5.

SERRANO MORALES, J., RASPOPOVIC, J. y MARCON, L., 2021. From embryos to embryoids: How external signals and self-organization drive embryonic development. *Stem Cell Reports*, vol. 16, no. 5, pp. 1039-1050. ISSN 2213-6711. DOI 10.1016/j.stemcr.2021.03.026.

Embryonic development has been traditionally seen as an inductive process directed by exogenous maternal inputs and extra-embryonic signals. Increasing evidence, however, is showing that, in addition to exogenous signals, the development of the embryo involves endogenous self-organization. Recently, this self-organizing potential has been highlighted by a number of stem cell models known as

embryoids that can recapitulate different aspects of embryogenesis in vitro. Here, we review the self-organizing behaviors observed in different embryoid models and seek to reconcile this new evidence with classical knowledge of developmental biology. This analysis leads to reexamine embryonic development as a guided self-organizing process, where patterning and morphogenesis are controlled by a combination of exogenous signals and endogenous self-organization. Finally, we discuss the multidisciplinary approach required to investigate the genetic and cellular basis of self-organization.

SIERRA LÓPEZ, M. del V., 2021. El asesinato por la intención del sujeto: dolo y problemas concursales. *Derecho penal y política criminal en tiempos convulsos*. S.l.: Tirant lo Blanch, pp. 217-222. ISBN 9788413556253.

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BALBINOT, E., BALOG, Z., BARACHE, C., BARBATO, D., BARROS, M., BARTOLOMÉ, S., BASSILANA, J.-L., BAUCHET, N., BAUDESSON-STELLA, A., BECCIANI, U., BELLAZZINI, M., BERNET, M., BERTONE, S., BIANCHI, L., BLANCO-CUARESMA, S., BOCH, T., BOMBRUN, A., BOSSINI, D., BOUQUILLON, S., BRAGAGLIA, A., BRAMANTE, L., BREEDT, E., BRESSAN, A., BROUILLET, N., BURLACU, A., BUSONERO, D., BUTKEVICH, A.G., BUZZI, R., CAFFAU, E., CANCELLIERE, R., CÁNOVAS, H., CANTAT-GAUDIN, T., CARBALLO, R., CARLUCCI, T., CARNERERO, M.I., CASAMIQUELA, L., CASTELLANI, M., CASTRO-GINARD, A., CASTRO SAMPOL, P., CHAOUL, L., CHARLOT, P., CHEMIN, L., CHIAVASSA, A., CIONI, M.-R.L., COMORETTO, G., CORNEZ, T., COWELL, S., CRIFO, F., CROSTA, M., CROWLEY, C., DAFONTE, C., DAPERGOLAS, A., DAVID, M., DAVID, P., DE LAVERNY, P., DE LUISE, F., DE MARCH, R., DE RIDDER, J., DE SOUZA, R., DE TEODORO, P., DE TORRES, A., DEL PELOSO, E.F., DEL POZO, E., DELGADO, A., DELGADO, H.E., DELISLE, J.-B., DI MATTEO, P., DIAKITE, S., DIENER, C., DISTEFANO, E., DOLDING, C., EAPPACHEN, D., EDVARDSSON, B., ENKE, H., ESQUEJ, P., FABRE, C., FABRIZIO, M., FAIGLER, S., FEDORETS, G., FERNIQUE, P., FIENGA, A., FIGUERAS, F., FOURON, C., FRAGKOUDI, F., FRAILE, E., FRANKE, F., GAI, M., GARABATO, D., GARCIA-GUTIERREZ, A., GARCÍA-TORRES, M., GAROFALO, A., GAVRAS, P., GERLACH, E., GEYER, R., GIACOBBE, P., GILMORE, G., GIRONA, S., GIUFFRIDA, G., GOMEL, R., GOMEZ, A., GONZALEZ-SANTAMARIA, I., GONZÁLEZ-VIDAL, J.J., GRANVIK, M., GUTIÉRREZ-SÁNCHEZ, R., GUY, L.P., HAUSER, M., HAYWOOD, M., HELMI, A., HIDALGO, S.L., HILGER, T., HŁADCZUK, N., HOBBS, D., HOLLAND, G., HUCKLE, H.E., JASNIEWICZ, G., JONKER, P.G., JUARISTI CAMPILLO, J., JULBE, F., KARBEVSKA, L., KERVELLA, P., KHANNA, S., KOCHOSKA, A., KONTIZAS, M., KORDOPATIS, G., KORN, A.J., KOSTRZEWA-RUTKOWSKA, Z., KRUSZYŃSKA, K., LAMBERT, S., LANZA, A.F., LASNE, Y., LE CAMPION, J.-F., LE FUSTEC, Y., LEBRETON, Y., LEBZELTER, T., LECCIA, S., LECLERC, N., LECOEUR-TAIBI, I., LIAO, S., LICATA, E., LINDSTRØM, H.E.P., LISTER, T.A., LIVANOU, E., LOBEL, A., MADRERO PARDO, P., MANAGAU, S., MANN, R.G., MARCHANT, J.M., MARCONI, M., MARCOS SANTOS, M.M.S., MARINONI, S., MAROCCO, F., MARSHALL, D.J., MARTIN POLO, L., MARTÍN-FLEITAS, J.M., MASIP, A., MASSARI, D., MASTROBUONO-BATTISTI, A., MAZEH, T., MCMILLAN, P.J., MESSINA, S., MILLAR, N.R., MINTS, A., MOLINA, D., MOLINARO, R., MOLNÁR, L., MONTEGRIFFO, P., MOR, R., MORBIDELLI, R., MOREL, T., MORRIS, D., MULONE, A.F., MUNOZ, D., MURAVEVA, T., MURPHY, C.P., MUSELLA, I., NOVAL, L., ORDÉNOVIC, C., ORRÙ, G., OSINDE, J., PAGANI, C., PAGANO, I., PALAVERSA, L., PALICIO, P.A., PANAHI, A., PAWLAK, M., PEÑALOSA ESTELLER, X., PENTTILÄ, A., PIERSIMONI, A.M., PINEAU, F.-X., PLACHY, E., PLUM, G., POGGIO, E., PORETTI, E., POUJOULET, E., PRŠA, A., PULONE, L., RACERO, E., RAGAINI, S., RAINER, M., RAITERI, C.M., RAMBAUX, N., RAMOS, P., RAMOS-LERATE, M., RE FIORENTIN, P., REGIBO, S., RIPEPI, V., RIVA, A., RIXON, G., ROBICHON, N., ROBIN, C., ROELENS, M., ROHRBASSER, L., ROMERO-GÓMEZ, M., ROWELL, N., ROYER, F., RYBICKI, K.A.,

SADOWSKI, G., SAGRISTÀ SELLÉS, A., SALGADO, J., SALGUERO, E., SAMARAS, N., SANCHEZ GIMENEZ, V., SANNA, N., SANTOVEÑA, R., SARASSO, M., SCHULTHEIS, M., SCIACCA, E., SEGOL, M., SEGOVIA, J.C., SÉGRANSAN, D., SEMEUX, D., SHAHAF, S., SIDDIQUI, H.I., SIEBERT, A., SILTALA, L., SLEZAK, E., SOLANO, E., SOLITRO, F., SOUAMI, D., SOUCHAY, J., SPAGNA, A., SPOTO, F., STEELE, I.A., STEIDELMÜLLER, H., STEPHENSON, C.A., SÜVEGES, M., SZABADOS, L., SZEGEDI-ELEK, E., TARIS, F., TAURAN, G., TAYLOR, M.B., TEIXEIRA, R., THUILLOT, W., TONELLO, N., TORRA, F., TORRA, J., TURON, C., UNGER, N., VAILLANT, M., VAN DILLEN, E., VANEL, O., VECCHIATO, A., VIALA, Y., VICENTE, D., VOUTSINAS, S., WEILER, M., WEVERS, T., WYRZYKOWSKI, L., YOLDAS, A., YVARD, P., ZHAO, H., ZOREC, J., ZUCKER, S., ZURBACH, C. y ZWITTER, T., 2021. Gaia Early Data Release 3: The Gaia Catalogue of Nearby Stars. *Astronomy and Astrophysics* [en línea], vol. 649. DOI 10.1051/0004-6361/202039498.

Aims. We produce a clean and well-characterised catalogue of objects within 100 pc of the Sun from the Gaia Early Data Release 3. We characterise the catalogue through comparisons to the full data release, external catalogues, and simulations. We carry out a first analysis of the science that is possible with this sample to demonstrate its potential and best practices for its use. Methods. Theselection of objects within 100 pc from the full catalogue used selected training sets, machine-learning procedures, astrometric quantities, and solution quality indicators to determine a probability that the astrometric solution is reliable. The training set construction exploited the astrometric data, quality flags, and external photometry. For all candidates we calculated distance posterior probability densities using Bayesian procedures and mock catalogues to define priors. Any object with reliable astrometry and a non-zero probability of being within 100 pc is included in the catalogue. Results. We have produced a catalogue of 331 312 objects that we estimate contains at least 92% of stars of stellar type M9 within 100 pc of the Sun. We estimate that 9% of the stars in this catalogue probably lie outside 100 pc, but when the distance probability function is used, a correct treatment of this contamination is possible. We produced luminosity functions with a high signal-to-noise ratio for the main-sequence stars, giants, and white dwarfs. We examined in detail the Hyades cluster, the white dwarf population, and wide-binary systems and produced candidate lists for all three samples. We detected local manifestations of several streams, superclusters, and halo objects, in which we identified 12 members of Gaia Enceladus. We present the first direct parallaxes of five objects in multiple systems within 10 pc of the Sun. Conclusions. We provide the community with a large, well-characterised catalogue of objects in the solar neighbourhood. This is a primary benchmark for measuring and understanding fundamental parameters and descriptive functions in astronomy. © ESO 2021.

SOLÍS MENCÍA, C.A., RAMOS ÁLVAREZ, J.J., RAMOS VÉLIZ, R., ARAMBERRI GUTIÉRREZ, M. y CALDERÓN MONTERO, F.J., 2021. Perfil antropométrico comparativo entre jugadores juveniles de rugby de élite. *Archivos de medicina del deporte: revista de la Federación Española de Medicina del Deporte y de la Confederación Iberoamericana de Medicina del Deporte*, vol. 38, no. 202, pp. 99-

106. ISSN 0212-8799.

The elite players of under-20 in Spain are heavier and have a larger percentage body fat and skeletal muscle mass than elite players of under-18. The foward units are heavier, taller and have a larger percentage body fat, skeletal muscle mass and bone mineral tan back units. The props are heavier positional and have larger percentage body fat. The seconds row are taller positional.

SOLÍS-URRA, P., OLIVARES-ARANCIBIA, J., SUÁREZ-CADENAS, E., SÁNCHEZ-MARTÍNEZ, J., RODRÍGUEZ-RODRÍGUEZ, F., ORTEGA, F.B., ESTEBAN-CORNEJO, I., CADENAS-SÁNCHEZ, C., CASTRO-PINERO, J., VELOZ, A., CHABERT, S., SADARANGANI, K.P., ZAVALA-CRICHTON, J.P., MIGUELES, J.H., MORA-GONZALEZ, J., QUIROZ-ESCOBAR, M., ALMONTE-ESPINOZA, D., URZUA, A., DRAGICEVIC, C.D., ASTUDILLO, A., MÉNDEZ-GASSIBE, E., RIQUELME-URIBE, D., AZAGRA, M.J. y CRISTI-MONTERO, C., 2021. Study protocol and rationale of the «Cogniaction project» a cross-sectional and randomized controlled trial about physical activity, brain health, cognition, and educational achievement in schoolchildren (vol 19, 260, 2019). *Bmc Pediatrics*, vol. 21, no. 1, pp. 251. DOI 10.1186/s12887-021-02718-9.

SOUSARAEI, A., QUEIRÓS, C., MOSCOSO, F.G., SILVA, A.M.G., LOPES-COSTA, T., PEDROSA, J.M., CUNHA-SILVA, L. y CABANILLAS-GONZALEZ, J., 2021. Reversible Protonation of Porphyrinic Metal-Organic Frameworks Embedded in Nanoporous Polydimethylsiloxane for Colorimetric Sensing. *Advanced Materials Interfaces* [en línea], vol. 8, no. 10. DOI 10.1002/admi.202001759.

A fast and reversible switch between the neutral and protonated porphyrin forms inside a pliable porphyrinic metal–organic framework (MOF), enabled by reversible structural deformation is unveiled. This phenomenon is applied for the development of MOF-polymer porous composites to reveal biogenic amines by color changes. © 2021 Wiley-VCH GmbH

VÁZQUEZ CANO, E., LÓPEZ MENESES, E., GÓMEZ GALÁN, J. y PARRA GONZÁLEZ, M.E., 2021. Innovative university practices on the educational advantages and disadvantages of MOOC Environments. *RED: Revista de Educación a Distancia*, vol. 21, no. 66, pp. 2- 0. ISSN 1578-7680. 10.6018/red.422141

Information and communication technologies have revolutionized the world as we knew it before its use and applicability to daily life. This use has also moved to the educational field and has transformed the way it is learned and taught today. In the midst of this panorama, Massive Online Open Courses emerge as an

opportunity available for everyone to learn, which has caused many changes in the educational field. This study is presented as an investigation into innovative university practices to analyze the advantages and disadvantages of these MOOCs in the Higher Education environment. Among the main advantages analyzed, we highlight its gratuity, the establishment of collaboration networks and time flexibility, while among the disadvantages we can highlight the abandonment, that some courses are not adapted or available for easy devices or lack of follow-up. The main idea is that once the advantages and disadvantages of MOOCs are known, the former should be encouraged, given the great benefits they entail for education; and in turn try to solve the disadvantages that have been seen that lead to the use of MOOCs, in order to promote the effectiveness of their use.

VELASCO PERDIGÓNES, J.C., 2021a. Fundamentos para la atribución de responsabilidad civil extracontractual en la «era tecnológica». *El sistema jurídico ante la digitalización: estudios de derecho privado*. S.l.: Tirant lo Blanch, pp. 145-174. ISBN 9788413558264.

VELASCO PERDIGÓNES, J.C., 2021b. La actividad de gestión del oficial de cumplimiento: contrato y propuesta de contenido. *Revista Crítica de Derecho Inmobiliario,* vol. 97, no. 784, pp. 1241-1289. ISSN 0210-0444.

The recognition of criminal responsibility for a legal person, set forth upon reform of the Criminal Code in 2010, gave rise to a new social and economic reality: regulatory Compliance services or Compliance services. The origination of new corporate needs based on the modification of the societas delinquere non potest principle drove new forms of establishing relationships within the professional scope. Thus, Compliance is being considered as a booming sector requiring the delimitation of the contractual content under which this service is provided. The bringing to market of Compliance services has raised a bit of concern and uncertainty in this field because of the lack of awareness of the elements to be integrated into the legal-contractual relationships for the provision of this new service. Showcasing an approach on the Compliance contract and outlining a content proposal for the performance to be assumed by the parties to the contract are deemed to be the cornerstone of this study. Starting with the fundamental function of supervision, surveillance and control of the criminal organisation and management models set forth by article 31 bis del Código civil for which the Compliance Officer shall stand out as the primary actor. This function is set up as a main purpose activity upon which the performance of the atypical Compliance contract is built. Nevertheless, it shall be supplemented by other previous and subsequent performance such as: prevention, information, and report to the management body of the legal person, in addition to other activities not related to the management itself (e.g. designing, preparing and implementing preventive models). This work aims to highlight and give visibility to the possible contractual relationship between the individual professionally performing the task of Compliance and the legal person demanding Compliance services and to subsequently make a proposal on the contractual content to which parties may have recourse.

VICENTE-SERRANO, S.M., PENA-ANGULO, D., MURPHY, C., LÓPEZ-MORENO, J., TOMÁS-BURGUERA, M., DOMÍNGUEZ-CASTRO, F., TIAN, F., EKLUNDH, L., CAI, Z., ÁLVAREZ-FARIZO, B., NOGUERA, I., CAMARERO, J.J., SÁNCHEZ-SALGUERO, R., GAZOL, A., GRAINGER, S., CONRADT, T., BOINCEAN, B. y EL KENAWY, A., 2021. The complex multi-sectoral impacts of drought: Evidence from a mountainous basin in the Central Spanish Pyrenees. *Science of the Total Environment*, vol. 769, pp. 144702. ISSN 0048-9697. DOI 10.1016/j.scitotenv.2020.144702.

We analyzed the impacts of drought severity on a variety of sectors in a topographically complex basin (the upper Aragon basin 2181 km(2)) in the Central Spanish Pyrenees. Using diverse data sources including meteorological and hydrological observations, remote sensing and tree rings, we analyze the possible hydrological implications of drought occurrence and severity on water availability in various sectors, including downstream impacts on irrigation water supply for aop production. Results suggest varying responses in forest activity, secondary growth, plant phenology, and crop yield to drought impacts. Specifically, meteorological droughts have distinct impacts downstream, mainly due to water partitioning between streamflow and irrigation channels that transport water to aop producing areas. This implies that drought severity can extend beyond the physical boundaries of the basin, with impacts on crop productivity. This complex response to drought impacts makes it difficult to develop objective basin-scale operational definitions for monitoring drought severity. Moreover, given the high spatial variability in responses to drought across sectors, it is difficult to establish reliable drought thresholds from indices that are relevant across all solo-economic sectors. The anthropogenic impacts (e.g water regulation projects, ecosystem services, land cover and land use changes) pose further challenges to assessing the response of different systems to drought severity. This study stresses the need to consider the seasonality of drought impacts and appropriate drought time scales to adequately assess and understand their complexity. (C) 2021 Elsevier B.V. All rights reserved.

VILLOTA OYARVIDE, W.R., GÓMEZ MASJUÁN, M.E. y LÓPEZ MENESES, E., 2021. Análisis de la implementación de la Realidad Aumentada como herramienta interactiva en medios impresos americanos. *Estudios sobre el mensaje periodístico*, no. 27, pp. 709-716. ISSN 1134-1629. 10.5209/esmp.71216

El presente estudio analiza la manera en que dos medios impresos del continente americano emplean la Realidad Aumentada como herramienta interactiva. El empleo de la Realidad Aumentada en el periodismo impreso podría incrementar la interactividad de los usuarios con los periódicos, a la vez que atraería nuevos públicos, para despertarles el interés por la prensa impresa y así ampliar su audiencia y cuota de mercado. Se analizan cinco ejemplares de los diarios Burnaby NOW (Canadá) y Kids News (Argentina). Se concluye que los ejemplares analizados se suman al proceso de renovación y reinvención del ecosistema mediático, motivados por las transformaciones tecnológicas -desde el

punto de vista infraestructural- y culturales y sociales -desde la óptica superestructural-, lo cual no solo trastoca los pilares de la profesión, sino también la estabilidad y supervivencia de las empresas periodísticas a las que pertenecen esos medios.

WLODARSKA, K., PIASECKI, P., LOBO-PRIETO, A., PAWLAK-LEMANSKA, K., GORECKI, T. y SIKORSKA, E., 2021. Rapid screening of apple juice quality using ultraviolet, visible, and near infrared spectroscopy and chemometrics: A comparative study. *Microchemical Journal*, vol. 164, pp. 106051. ISSN 0026-265X. DOI 10.1016/j.microc.2021.106051.

The aim of this study was to evaluate and compare potential of different optical spectroscopic techniques for quality assessment of apple juices. The calibration partial least squares (PLS) regression models were developed and optimized for determination of quality parameters of apple juice non-destructively from the NIR spectra of fruit or directly from the UV-VIS-NIR spectra of juices. The external models validation was performed using the test sample set. Calibration models based on the NIR spectra of fruit were characterized by high predictive ability for soluble solids content, SSC (R2P = 0.93, RPDP = 3.5), moderate for titratable acidity, TA (R2P = 0.81, RPDP = 2.1), pH (R2P = 0.82, RPDP = 2.1) and ratio of SSC to TA, SSC/TA (R2P = 0.72, RPDP = 1.8), and low for total phenolic content, TPC (R2P = 0.44, RPDP = 1.3) and total flavonoid content, TFC (R2P = 0.49, RPDP = 1.2). The performance of PLS models based on the juice spectra was dependent on the spectral region used for analysis. The models with the highest predictive ability for SSC (R2P = 0.95, RPDP = 5.0) and TA (R2P = 0.96, RPDP = 4.6) were obtained using UV-VIS-NIR spectra of juice. The models with the highest predictive ability for SSC/TA (R2P = 0.89, RPDP = 3.0) and pH (R2P = 0.91, RPDP = 3.3) were obtained using VIS-NIR spectra. The optimal model for TPC (R2P = 0.95, RPDP = 4.1) was obtained using UV-VIS spectra, and for TFC using UV spectra of juices (R2P = 0.80, RPDP = 2.5). The results may contribute to the development of method for fast quality control of juices.