College of Liberal Arts and Sciences
Scholarly publications from SCOPUS – month ending 16Mar2016

BIOLOGICAL SCIENCES

Benoit, J. B., Adelman, Z. N., Reinhardt, K., Dolan, A., Poelchau, M., Jennings, E. C., . . . Richards, S. (2016). Unique features of a global human ectoparasite identified through sequencing of the bed bug genome. *Nature Communications, 7*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957602748&partnerID=40&md5=d2855628f575de236e664b52f1a132e3.
The bed bug, Cimex lectularius, has re-established itself as a ubiquitous human ectoparasite throughout much of the world during the past two decades. This global resurgence is likely linked to increased international travel and commerce in addition to widespread insecticide resistance. Analyses of the C. lectularius sequenced genome (650 Mb) and 14,220 predicted protein-coding genes provide a comprehensive representation of genes that are linked to traumatic insemination, a reduced chemosensory repertoire of genes related to obligate hematophagy, host-symbiont interactions, and several mechanisms of insecticide resistance. In addition, we document the presence of multiple putative lateral gene transfer events. Genome sequencing and annotation establish a solid foundation for future research on mechanisms of insecticide resistance, human-bed bug and symbiont-bed bug associations, and unique features of bed bug biology that contribute to the unprecedented success of C. lectularius as a human ectoparasite.

Cloutier, S. C., Wang, S., Ma, W. K., Al Husini, N., Dhoondia, Z., Ansari, A., . . . Tran, E. J. (2016). Regulated Formation of lncRNA-DNA Hybrids Enables Faster Transcriptional Induction and Environmental Adaptation. *Molecular Cell, 61*(3), 393-404.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957654693&partnerID=40&md5=00c6752cf2b9d659fdf7963896e08582.
Long non-coding (lnc)RNAs, once thought to merely represent noise from imprecise transcription initiation, have now emerged as major regulatory entities in all eukaryotes. In contrast to the rapidly expanding identification of individual lncRNAs, mechanistic characterization has lagged behind. Here we provide evidence that the GAL lncRNAs in the budding yeast S. cerevisiae promote transcriptional induction in trans by formation of lncRNA-DNA hybrids or R-loops. The evolutionarily conserved RNA helicase Dbp2 regulates formation of these R-loops as genomic deletion or nuclear depletion results in accumulation of these structures across the GAL cluster gene promoters and coding regions. Enhanced transcriptional induction is manifested by lncRNA-dependent displacement of the Cyc8 co-repressor and subsequent gene looping, suggesting that these lncRNAs promote induction by altering chromatin architecture. Moreover, the GAL lncRNAs confer a competitive fitness advantage to yeast cells because expression of these non-coding molecules correlates with faster adaptation in response to an environmental switch.

Gajan, A., Barnes, V. L., Liu, M., Saha, N., & Pile, L. A. (2016). The histone demethylase dKDM5/LID interacts with the SIN3 histone deacetylase complex and shares functional similarities with SIN3. *Epigenetics and Chromatin, 9*(1).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-

84956683385&partnerID=40&md5=5410bae2642eba4b35cbccfba5642c1a.
Background: Regulation of gene expression by histone-modifying enzymes is essential to control cell fate decisions and developmental processes. Two histone-modifying enzymes, RPD3, a deacetylase, and dKDM5/LID, a demethylase, are present in a single complex, coordinated through the SIN3 scaffold protein. While the SIN3 complex has been demonstrated to have functional histone deacetylase activity, the role of the demethylase dKDM5/LID as part of the complex has not been investigated. Results: Here, we analyzed the developmental and transcriptional activities of dKDM5/LID in relation to SIN3. Knockdown of either Sin3A or lid resulted in decreased cell proliferation in S2 cells and wing imaginal discs. Conditional knockdown of either Sin3A or lid resulted in flies that displayed wing developmental defects. Interestingly, overexpression of dKDM5/LID rescued the wing developmental defect due to reduced levels of SIN3 in female flies, indicating a major role for dKDM5/LID in cooperation with SIN3 during development. Together, these observed phenotypes strongly suggest that dKDM5/LID as part of the SIN3 complex can impact previously uncharacterized transcriptional networks. Transcriptome analysis revealed that SIN3 and dKDM5/LID regulate many common genes. While several genes implicated in cell cycle and wing developmental pathways were affected upon altering the level of these chromatin factors, a significant affect was also observed on genes required to mount an effective stress response. Further, under conditions of induced oxidative stress, reduction of SIN3 and/or dKDM5/LID altered the expression of a greater number of genes involved in cell cycle-related processes relative to normal conditions. This highlights an important role for SIN3 and dKDM5/LID proteins to maintain proper progression through the cell cycle in environments of cellular stress. Further, we find that target genes are bound by both SIN3 and dKDM5/LID, however, histone acetylation, not methylation, plays a predominant role in gene regulation by the SIN3 complex. Conclusions: We have provided genetic evidence to demonstrate functional cooperation between the histone demethylase dKDM5/LID and SIN3. Biochemical and transcriptome data further support functional links between these proteins. Together, the data provide a solid framework for analyzing the gene regulatory pathways through which SIN3 and dKDM5/LID control diverse biological processes in the organism. © 2016 Gajan et al.

Naeger, J. A., & Golenberg, E. M. (2016). Mode and tempo of sequence and floral evolution within the Anserineae. *Plant Systematics and Evolution*, 1-14.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957583173&partnerID=40&md5=3ea000cada6d759fd1374c81add98647.
The Chenopodiaceae Tribe Anserineae Dumort was proposed to include the genus Spinacia and the genus Blitum. In addition to the recent domestication of Spinacia, the tribe demonstrates extensive evolution within its floral development. We test whether the development of dioecy, monoecy, and protogyny is reflected differentially among floral developmental versus non-floral developmental genes, and whether recent domestication leaves traces in the phylogenetic relationship within the genus Spinacia. The phylogenetic predictions consistently support the sister relationship of Spinacia sp. to a Blitum clade consisting of Blitum bonus-henricus, Blitum virgatum, and Blitum nuttallianum. Relative rates tests indicate a generally faster rate of nucleotide substitutions within Spinacia. Tests of selection indicate that there is generally purifying selection acting on the sequences. In addition, insertion/deletion (indel) events occur

more prominently within the Spinacia clade and occur in both coding and intron regions. The phylogenetic relationships within this tribe calls into question the hypothesis that dioecy in Spinacia evolved from a monoecious grade. The evidence for purifying selection in Spinacia suggests that the increased nucleotide substitution rates are not driving protein evolution, in contrast to evidence of protein sequence and structure evolution driven by indels. There is no footprint of domestication on sequence evolution, and we cannot detect phylogenetic signals that would support separation of the Spinacia accessions into three distinct taxa. © 2016 Springer-Verlag Wien

Saha, N., Liu, M., Gajan, A., & Pile, L. A. (2016). Genome-wide studies reveal novel and distinct biological pathways regulated by SIN3 isoforms. *BMC Genomics*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957708216&partnerID=40&md5=c3e0d9761b2679b882144512d06e4a43.
Background: The multisubunit SIN3 complex is a global transcriptional regulator. In Drosophila, a single Sin3A gene encodes different isoforms of SIN3, of which SIN3 187 and SIN3 220 are the major isoforms. Previous studies have demonstrated functional non-redundancy of SIN3 isoforms. The role of SIN3 isoforms in regulating distinct biological processes, however, is not well characterized. Results: We established a Drosophila S2 cell culture model system in which cells predominantly express either SIN3 187 or SIN3 220. To identify genomic targets of SIN3 isoforms, we performed chromatin immunoprecipitation followed by deep sequencing. Our data demonstrate that upon overexpression of SIN3 187, the level of SIN3 220 decreased and the large majority of genomic sites bound by SIN3 220 were instead bound by SIN3 187. We used RNA-seq to identify genes regulated by the expression of one isoform or the other. In S2 cells, which predominantly express SIN3 220, we found that SIN3 220 directly regulates genes involved in metabolism and cell proliferation. We also determined that SIN3 187 regulates a unique set of genes and likely modulates expression of many genes also regulated by SIN3 220. Interestingly, biological pathways enriched for genes specifically regulated by SIN3 187 strongly suggest that this isoform plays an important role during the transition from the embryonic to the larval stage of development. Conclusion: These data establish the role of SIN3 isoforms in regulating distinct biological processes. This study substantially contributes to our understanding of the complexity of gene regulation by SIN3. © 2016 Saha et al.

CHEMISTRY

Bellow, J. A., Yousif, M., & Groysman, S. (2016). Discrete Complexes of 3d Metals with Monodentate Bulky Alkoxide Ligands and Their Reactivity in Bond Activation and Bond Formation Reactions. *Comments on Inorganic Chemistry, 36*(2), 92-122.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957928042&partnerID=40&md5=1c0cde3c40c9d62189e01145e8f19c63.
This review focuses on the design, synthesis, and reactivity of low-coordinate base transition metal complexes supported by bulky alkoxide ligands. The unique electronic features of alkoxide ligands result in strongly electrophilic character at the metal centers, which enhances reactivity of metal-bound substrates and facilitates their transformation. However, insufficiently bulky

alkoxide ligands tend to form oligomeric and polymeric aggregates, thus circumventing well-defined reactivity at isolated metal centers. This review examines first the requirements for the attainment of mononuclear complexes in alkoxide ligand environments. Coordination chemistry of the most prominent alkoxide ligands [OCR3] is discussed, with particular emphasis on the impact of the R group on the nuclearity of the resulting complex and the number of alkoxide ligands bound to it. Next, the behavior of such complexes in group transfer chemistry and ensuing reactivity is examined. While several previously synthesized alkoxide ligands are discussed, the major focus of this review is on the recent chemistry of the "asymmetric" alkoxide ligands [OCtBu2Me] and [OCtBu2Ph] with the middle and late 3d metals.

Buda, S., & Crich, D. (2016). Oxidative Deamination of N-Acetyl Neuraminic Acid: Substituent Effects and Mechanism. *Journal of the American Chemical Society, 138*(3), 1084-1092.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84956821468&partnerID=40&md5=b26cc5abc4b0bd9a1ec17ce7ec0ff062.
A study of the mechanism of the oxidative deamination of the N-nitroso-N-acetyl sialyl glycosides leading with overall retention of configuration to the corresponding 2-keto-3-deoxy-d-glycero-d-galacto-nonulopyranosidonic acid (KDN) glycosides is described, making use of a series of differentially O-protected N-nitroso-N-acetyl sialyl glycosides and of isotopic labeling studies. No evidence is found for stereodirecting participation by ester groups at the 4- and 7-positions. Comparisons are drawn with oxidative deamination reactions of 4-amino-4-deoxy and 2-amino-2-deoxy hexopyranosides and a common mechanism is formulated involving the intermediacy of 1-oxabicyclo[3.1.0]hexyl oxonium ions following participation by the pyranoside ring oxygen. A minor reaction pathway has been uncovered by labeling studies in the β-thiosialosides that results in the exchange of the 4-O-acetyl group by the glacial acetic acid that serves as external nucleophile in the general oxidative deamination process. A mechanism is proposed for this exchange involving participation by the thioglycoside at the level of an intermediate diazoalkane.

Danforth, S. J., Liyanage, D. R., Hitihami-Mudiyanselage, A., Ilic, B., Brock, S. L., & Bussell, M. E. (2016). Probing hydrodesulfurization over bimetallic phosphides using monodisperse Ni2-xMxP nanoparticles encapsulated in mesoporous silica. *Surface Science, 648*, 126-135.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958781118&partnerID=40&md5=8ad08357df794db900cdf56c615fbd61.
Metal phosphide nanoparticles encapsulated in mesoporous silica provide a well-defined system for probing the fundamental chemistry of the hydrodesulfurization (HDS) reaction over this new class of hydrotreating catalysts. To investigate composition effects in bimetallic phosphides, the HDS of dibenzothiophene (DBT) was carried out over a series of Ni-rich Ni2-xMxP@mSiO2 (M = Co, Fe) nanocatalysts ($x \leq 0.50$). The Ni2-xMxP nanoparticles (average diameters: 11-13 nm) were prepared by solution-phase arrested precipitation and encapsulated in mesoporous silica, characterized by a range of techniques (XRD, TEM, IR spectroscopy, BET surface area, CO chemisorption) and tested for DBT HDS activity and selectivity. The highest activity was observed

for a Ni1.92Co0.08P@mSiO2 nanocatalyst, but the overall trend was a decrease in HDS activity with increasing Co or Fe content. In contrast, the highest turnover frequency (TOF) was observed for the most Co- and Fe-rich compositions based on sites titrated by CO chemisorption. IR spectral studies of adsorbed CO on the Ni2-xMxP@mSiO2 catalysts indicate that an increase in electron density occurs on Ni sites as the Co or Fe content is increased, which may be responsible for the increased TOFs of the catalytic sites. The Ni2-xMxP@mSiO2 nanocatalysts exhibit a strong preference for the direct desulfurization pathway (DDS) for DBT HDS that changes only slightly with increasing Co or Fe content.

Dharuman, S., & Crich, D. (2016). Determination of the Influence of Side-Chain Conformation on Glycosylation Selectivity using Conformationally Restricted Donors. *Chemistry - A European Journal*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959120468&partnerID=40&md5=d3f5cd598ec5bed0712382521a121a3d.
The synthesis of a series of conformationally locked mannopyranosyl thioglycosides in which the C6-O6 bond adopts either the gauche,gauche, gauche,trans, or trans,gauche conformation is described, and their influence on glycosylation stereoselectivity investigated. Two 4,6-O-benzylidene-protected mannosyl thioglycosides carrying axial or equatorial methyl groups at the 6-position were also synthesized and the selectivity of their glycosylation reactions studied to enable a distinction to be made between steric and stereoelectronic effects. The presence of an axial methoxy group at C6 in the bicyclic donor results in a decreased preference for formation of the β-mannoside, whereas an axial methyl group has little effect on selectivity. The result is rationalized in terms of through-space stabilization of a transient intermediate oxocarbenium ion by the axial methoxy group resulting in a higher degree of SN1-like character in the glycosylation reaction. Comparisons are made with literature examples and exceptions are discussed in terms of pervading steric effects layered on top of the basic stereoelectronic effect.

Gamage, N. D. H., Stiasny, B., Stierstorfer, J., Martin, P. D., Klapötke, T. M., & Winter, C. H. (2016). Highly Energetic, Low Sensitivity Aromatic Peroxy Acids. *Chemistry - A European Journal, 22*(8), 2582-2585.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958172773&partnerID=40&md5=c8e3a7050233f67847970cc11528fbb3.
The synthesis, structure, and energetic materials properties of a series of aromatic peroxy acid compounds are described. Benzene-1,3,5-tris(carboperoxoic) acid is a highly sensitive primary energetic material, with impact and friction sensitivities similar to those of triacetone triperoxide. By contrast, benzene-1,4-bis(carboperoxoic) acid, 4-nitrobenzoperoxoic acid, and 3,5-dinitrobenzoperoxoic acid are much less sensitive, with impact and friction sensitivities close to those of the secondary energetic material 2,4,6-trinitrotoluene. Additionally, the calculated detonation velocities of 3,5-dinitrobenzoperoxoic acid and 2,4,6-trinitrobenzoperoxoic acid exceed that of 2,4,6-trinitrotoluene. The solid-state structure of 3,5-dinitrobenzoperoxoic acid contains intermolecular O-H···O hydrogen bonds and numerous N···O, C···O, and O···O close contacts. These attractive lattice interactions may account for the less sensitive nature of 3,5-dinitrobenzoperoxoic acid.

Klesko, J. P., Kerrigan, M. M., & Winter, C. H. (2016). Low Temperature Thermal Atomic Layer Deposition of Cobalt Metal Films. *Chemistry of Materials, 28*(3), 700-703.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957964166&partnerID=40&md5=0f56f6c95cb80ce044d9ac805538f5ef.
A complete atomic layer deformation (ALD) growth study was carried out using cobalt precursor and formic acid. Precursor pulse lengths, substrate temperatures, and the number of cycles were varied to assess the growth behavior. A 93 nm thick cobalt metal film grown at 180°C was analyzed by X-ray diffraction. Depositions were carried out at 180°C with 100, 150, and 250 cycles on ruthenium substrates to assess the point at which continuous films were obtained. After 100 cycles, SEM revealed a less than 2 nm thick film. By contrast, a film grown with 150 cycles revealed a continuous 11 nm thick layer. The cobalt metal growth between 100 and 150 cycles may be enhanced by CVD and could be promoted by the ruthenium surface. Depositions were also carried out at 180°C with 50, 100, 150, 200, and 250 cycles on platinum substrates. SEM analyses showed continuous films for all samples.

Rodgers, M. T., & Armentrout, P. B. (2016) Discriminating Properties of Alkali Metal Ions Towards the Constituents of Proteins and Nucleic Acids. Conclusions from Gas-Phase and Theoretical Studies. *Vol. 16. Metal Ions in Life Sciences* (pp. 103-131).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958042026&partnerID=40&md5=47478ce72a7ff8c247c802de1d6fdd2c.
Quantitative insight into the structures and thermodynamics of alkali metal cations interacting with biological molecules can be obtained from studies in the gas phase combined with theoretical work. In this chapter, the fundamentals of the experimental and theoretical techniques are first summarized and results for such work on complexes of alkali metal cations with amino acids, small peptides, and nucleobases are reviewed. Periodic trends in how these interactions vary as the alkali metal cations get heavier are highlighted. © 2016 Springer International Publishing Switzerland.

Wu, R. R., Yang, B., Frieler, C. E., Berden, G., Oomens, J., & Rodgers, M. T. (2016). 2,4-Dihydroxy and O2 Protonated Tautomers of dThd and Thd Coexist in the Gas Phase: Methylation Alters Protonation Preferences versus dUrd and Urd. *Journal of the American Society for Mass Spectrometry, 27*(3), 410-421.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958183449&partnerID=40&md5=13d9c36c11d48fb4ca3d3a68a772d4ae.
The gas-phase structures of protonated thymidine, [dThd + H]+, and its modified form, protonated 5-methyluridine, [Thd + H]+, are examined by infrared multiple photon dissociation (IRMPD) action spectroscopy combined with electronic structure calculations. IRMPD action spectra are measured over the ranges extending from ~600 to 1900 cm-1 and ~2800 to 3800 cm-1 using the FELIX free electron laser and an optical parametric oscillator/amplifier (OPO/OPA) laser system, respectively. Comparisons between the B3LYP/6-311+G(d,p) linear IR spectra calculated for the stable low-energy conformers and the measured IRMPD spectra are used to determine the most favorable tautomeric conformations of [dThd + H]+ and [Thd + H]+

and to identify those populated in the experiments. Both B3LYP and MP2 levels of theory predict a minor 2,4-dihydroxy tautomer as the ground-state conformer of [dThd + H]+ and [Thd + H]+ indicating that the 2'-hydroxyl substituent of Thd does not exert a significant impact on the structural features. [dThd + H]+ and [Thd + H]+ share parallel IRMPD spectral profiles and yields in both the FELIX and OPO regions. Comparisons between the measured IRMPD and calculated IR spectra suggest that minor 2,4-dihydroxy tautomers and O2 protonated conformers of [dThd + H]+ and [Thd + H]+ are populated in the experiments. Comparison of this work to our previous IRMPD spectroscopy study of protonated 2'-deoxyuridine and uridine suggests that the 5-methyl substituent alters the preferences of O2 versus O4 protonation. © 2015 American Society for Mass Spectrometry.

CRIMINAL JUSTICE

Dembo, R., Briones-Robinson, R., Wareham, J., Winters, K. C., Ungaro, R., & Karas, L. (2016). A Longitudinal Study of Truant Youths' Involvement in Sexual Risk Behavior. *Journal of Child and Adolescent Substance Abuse, 25*(2), 89-104.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958746202&partnerID=40&md5=e3a21f27c091b5f93a4bee4eea5a24c2.
Truant youths are likely to engage in a number of problem behaviors, including sexual risky behaviors. As part of a National Institute on Drug Abuse (NIDA)-funded, prospective intervention project, a sample of truant youths' sexual risk behavior was tracked over five time points. Analyses of the data was informed by four objectives: (a) determine if a growth model parameterization was consistent with the youths' sexual risk behavior, (b) assess the impact of a brief intervention (BI) targeting substance use on their sexual risk behavior over time, (c) identify any sexual risk behavior subgroups, and (d) identify any differential, longitudinal effects of the BI on the youths' sexual risk behavior. Results indicated the youths' sexual risk behavior reflected a linear growth model; no intervention effects were found on their sexual risk behavior over time; distinct sexual risk behavior subgroups were found; and no patterned intervention effects were found in regard to the sexual risk behavior subgroups. At the same time, there is a very serious need to provide effective sexual risk reduction intervention services to truant youths. © 2016 Taylor & Francis Group, LLC.

ENGLISH

Nathan, G. S. (2015). Phonology *Handbook of Cognitive Linguistics* (Vol. 39, pp. 253-273).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957637482&partnerID=40&md5=1cafb21dadbf13bb49c03fde76fc3fc6.

HISTORY

Bukowczyk, J. J. (2016). California dreamin', Whiteness, and the American dream. *Journal of American Ethnic History, 35*(2), 91-106.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957622651&partnerID=40&md5=01ecfe345312ac087f09999ee10f627a.

MATHEMATICS

Benson, D., & Bruner, R. R. (2016). A counterexample for lightning flash modules over E(e1, e2). *Archiv der Mathematik*, 1-3.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959137580&partnerID=40&md5=99ba926ba6c41843f8a2910c073a4d96.
We give a counterexample to Theorem 5 in Section 18.2 of Margolis' book, "Spectra and the Steenrod Algebra" and make remarks about the proofs of some later theorems in the book that depend on it. The counterexample is a module which does not split as a sum of lightning flash modules and free modules. © 2016 The Author(s)

Chen, L., Liu, Z., & Lu, G. (2016). Qualitative properties of solutions to an integral system associated with the bessel potential. *Communications on Pure and Applied Analysis, 15*(3), 893-906.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958751868&partnerID=40&md5=e55f44c9ff1c73c791de0b23988e0d20.
In this paper, we study a differential system associated with the Bessel potential: [EQUATION PRESENTED] is the Laplacian operator in Rn. Under some appropriate conditions, this di erential system is equivalent to an integral system of the Bessel potential type. By the regularity lifting method developed in [4] and [18], we obtain the regularity of solutions to the integral system. We then apply the moving planes method to obtain radial symmetry and monotonicity of positive solutions. We also establish the uniqueness theorem for radially symmetric solutions. Our nonlinear terms f1(u(x); v(x)) and f2(u(x); v(x)) are quite general and our results extend the earlier ones even in the case of single equation substantially.

Chen, L., Liu, Z., & Lu, G. (2016). Symmetry and regularity of solutions to the weighted hardy-sobolev type system. *Advanced Nonlinear Studies, 16*(1), 1-13.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957933912&partnerID=40&md5=1ffb7cb7205a3ec738e89b5b80b6e8e0.
Hardy-Littlewood-Sobolev inequalities and the Hardy-Sobolev type system play an important role in analysis and PDEs. In this paper, we consider the very general weighted Hardy-Sobolev type system Only the special cases when γ1 = γ2 = 0 and one of λi and μi is zero (for both i = 1 and i = 2) have been considered in the literature. We establish the integrability of the solutions to the above Hardy-Sobolev type system and the C∞ regularity of solutions to this system away from the origin, which improves significantly the Lipschitz continuity in most works in the

literature. Moreover, we also use the moving plane method of [8] in integral forms developed in [6] to prove that each pair (u, v) of positive solutions of the above integral system is radially symmetric and strictly decreasing about the origin. © 2016 by De Gruyter.

Colombo, G., Henrion, R., Hoang, N. D., & Mordukhovich, B. S. (2015). Discrete Approximations of a Controlled Sweeping Process. *Set-Valued and Variational Analysis, 23*(1), 69-86.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958533028&partnerID=40&md5=aea672d2cd900783ed07748b4b7b1327.
The paper is devoted to the study of a new class of optimal control problems governed by the classical Moreau sweeping process with the new feature that the polyhedral moving set is not fixed while controlled by time-dependent functions. The dynamics of such problems is described by dissipative non-Lipschitzian differential inclusions with state constraints of equality and inequality types. It makes challenging and difficult their analysis and optimization. In this paper we establish some existence results for the sweeping process under consideration and develop the method of discrete approximations that allows us to strongly approximate, in the W1,2 topology, optimal solutions of the continuous-type sweeping process by their discrete counterparts. © 2014, Springer Science+Business Media Dordrecht.

Lam, N., Lu, G., & Tang, H. (2016). Sharp Affine and Improved Moser–Trudinger–Adams Type Inequalities on Unbounded Domains in the Spirit of Lions. *Journal of Geometric Analysis*, 1-35.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959125576&partnerID=40&md5=685ee0c4c1a6368178676a745bdba1cd.
The purpose of this paper is threefold. First, we prove sharp singular affine Moser–Trudinger inequalities on both bounded and unbounded domains in (Formula presented.). In particular, we will prove the following much sharper affine Moser–Trudinger inequality in the spirit of Lions (Rev Mat Iberoamericana 1(2):45–121, 1985) (see our Theorem 1.4): Let (Formula presented.), (Formula presented.) and (Formula presented.). Then there exists a constant (Formula presented.) such that for all (Formula presented.) and (Formula presented.) with the affine energy (Formula presented.), we have (Formula presented.)Moreover, the constant (Formula presented.) is the best possible in the sense that there is no uniform constant (Formula presented.) independent of u in the above inequality when (Formula presented.). Second, we establish the following improved Adams type inequality in the spirit of Lions (Theorem 1.8): Let (Formula presented.) and (Formula presented.). Then there exists a constant (Formula presented.) such that (Formula presented.)for all (Formula presented.). When (Formula presented.), the supremum is infinite. In the above, we use (Formula presented.)The main difficulties of proving the above results are that the symmetrization method does not work. Therefore, our main ideas are to develop a rearrangement-free argument in the spirit of Lam and Lu (J Differ Equ 255(3):298–325, 2013; Adv Math 231(6): 3259–3287, 2012), Lam et al. (Nonlinear Anal 95: 77–92, 2014) to establish such theorems. Third, as an application, we will study the existence of weak solutions to the biharmonic equation (Formula presented.)where the nonlinearity f has the critical exponential growth. © 2016 Mathematica Josephina, Inc.

Malcolmson, P., Okoh, F., & Srinivas, V. (2016). Factorial fermat curves over the rational numbers. *Colloquium Mathematicum, 142*(2), 285-300.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84956931098&partnerID=40&md5=7c81a413c43cbadce8428b23d321d518.
A polynomial f in the set {X n + Y n , X n + Y n − Z n , X n + Y n + Z n , X n +Y n −1} lends itself to an elementary proof of the following theorem: if the coordinate ring over ℚ of f is factorial, then n is one or two. We give a list of problems suggested by this result. © Instytut Matematyczny PAN, 2016.

Mordukhovich, B. S., Outrata, J. V., & Ramírez C, H. (2015). Graphical Derivatives and Stability Analysis for Parameterized Equilibria with Conic Constraints. *Set-Valued and Variational Analysis, 23*(4), 687-704.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958546349&partnerID=40&md5=8860e878653f4c1a720271aedc3bf9eb.
The paper concerns parameterized equilibria governed by generalized equations whose multivalued parts are modeled via regular normals to nonconvex conic constraints. Our main goal is to derive a precise pointwise second-order formula for calculating the graphical derivative of the solution maps to such generalized equations that involves Lagrange multipliers of the corresponding KKT systems and critical cone directions. Then we apply the obtained formula to characterizing a Lipschitzian stability notion for the solution maps that is known as isolated calmness. © 2015, Springer Science+Business Media Dordrecht.

Mordukhovich, B. S., & Sarabi, M. E. (2016). Second-Order Analysis of Piecewise Linear Functions with Applications to Optimization and Stability. *Journal of Optimization Theory and Applications*, 1-23.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959090911&partnerID=40&md5=cd545c0f9821c6ada1fcddb235da5f9e.
This paper is devoted to second-order variational analysis of a rather broad class of extended-real-valued piecewise liner functions and their applications to various issues of optimization and stability. Based on our recent explicit calculations of the second-order subdifferential for such functions, we establish relationships between nondegeneracy and second-order qualification for fully amenable compositions involving piecewise linear functions. We then provide a second-order characterization of full stable local minimizers in composite optimization and constrained minimax problems. © 2016 Springer Science+Business Media New York

Mordukhovich, B. S., & Zaslavski, A. J. (2015). Preface: Recent Advances in Optimal Control and Applications. *Set-Valued and Variational Analysis, 23*(1), 1-2.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958549881&partnerID=40&md5=affc1279ed2fc4638e28b66c4e831bd8.

Salch, A. (2015). A recognition principle for the existence of descent data. *Journal of Homotopy and Related Structures, 10*(4), 985-994.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958531679&partnerID=40&md5=a7188e25a7ff10ce9dce957b975dc509.

Suppose (Formula presented.) is a faithfully flat ring map. Given an (Formula presented.) -module (Formula presented.) , does there exists some (Formula presented.) -module (Formula presented.) such that (Formula presented.) ? In this paper we work out (as a special case of a more general question about extensions of comonads) a criterion for the existence of such an (Formula presented.) -module (Formula presented.) , under some reasonable hypotheses on the map (Formula presented.). © 2014, Tbilisi Centre for Mathematical Sciences.

Tran, K., Yin, G., & Wang, L. Y. (2016). A generalized Goodwin business cycle model in random environment. *Journal of Mathematical Analysis and Applications, 438*(1), 311-327. http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959096363&partnerID=40&md5=c5ddaedd07e41a3e7abafb4cf446e549.
This work develops a generalization of the Goodwin-Lotka-Volterra models. The traditional model describes the evolution of the employment rate and the labor share. Motivated by recent developments on business cycles and Goodwin-type models, we consider a generalized Goodwin business cycle model with noise. We aim at investigating the impact of telegraph noise and white noise on the evolution of trajectories and the energy on trajectories of the model. It is proved that with the presence of the noises, all trajectories exit any compact subset of the open unit square D=(0, 1). ×. (0, 1) and the energy along trajectories can be arbitrarily large. Moreover, under certain additional conditions, the boundary of D is the stable limit cycle of the perturbed model by white noise. Noise impact on the period of business cycles is also discussed. Numerical examples are provided to demonstrate our findings. © 2016 Elsevier Inc.

Umirbaev, U. (2016). Algorithmic problems for differential polynomial algebras. *Journal of Algebra, 455*, 77-92.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959086998&partnerID=40&md5=17c23b3a43c18b48b583e9309367b0e5.
We prove that the ideal membership problem and the subalgebra membership problem are algorithmically undecidable for differential polynomial algebras with at least two basic derivation operators. © 2016 Elsevier Inc..

Wang, L., Lin, F., & Yin, G. (2016). Network robustness depth and topology management of networked dynamic systems. *Journal of Systems Science and Complexity, 29*(1), 1-21.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957934912&partnerID=40&md5=762d7b64b0170b7b58ab1cdf4d3243ee.
Networked control systems are subject to adversary conditions that affect their network topologies. To ensure reliable system operations, network topologies need to be characterized and managed for their impact on the overall system performance. This paper introduces the concept of network robustness depth for this pursuit. Discrete event systems are used as a foundation to model dynamic behavior of network topologies, support their analysis, and carry out their management. Stochastic analysis relates the link reliability probabilities to a probabilistic characterization of network robustness depth. Several topology management strategies are discussed, including passive methods, random strategies, and optimization methodologies. Their respective benefits and limitations are quantified. By using platoon control as a platform of hybrid (continuous and discrete event) systems and packet erasure channels as

a communication protocol, the results are demonstrated with case studies. © 2015, Institute of Systems Science, Academy of Mathematics and Systems Science, CAS and Springer-Verlag Berlin Heidelberg.

Wang, L. Y., Wang, C., Yin, G., Lin, F., Polis, M. P., Zhang, C., & Jiang, J. (2016). Balanced control strategies for interconnected heterogeneous battery systems. *IEEE Transactions on Sustainable Energy, 7*(1), 189-199.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958120631&partnerID=40&md5=dcc7fb6d20871e76825998eb21c9d31d.
This paper develops new balanced charge/discharge strategies that distribute charge or discharge currents properly so that during operation, battery systems maintain uniform state-of-charge (SOC) all the time. The proposed balanced charge/discharge control strategies are useful for interconnected heterogeneous battery systems that can be built from battery modules with different types, ages, and power/capacity ratings. Both voltage-based and SOC-based balanced charge/discharge strategies are developed. Their convergence properties are rigorously established, and illustrative examples using production batteries demonstrate their convergence behavior under different charging current profiles. The approach will be especially useful for battery storage systems to support power grids with renewable energy sources where the battery systems are required to operate continuously. © 2015 IEEE.

PHYSICS

Abbaneo, D., Abbas, M., Abbrescia, M., Abdelalim, A. A., Abi Akl, M., Aboamer, O., . . . Zhang, A. (2016). Fiber Bragg Grating (FBG) sensors as flatness and mechanical stretching sensors. *Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957696363&partnerID=40&md5=12ab0a35f8350e70b85bb975c374183f.
A novel approach which uses Fiber Bragg Grating (FBG) sensors has been utilized to assess and monitor the flatness of Gaseous Electron Multipliers (GEM) foils. The setup layout and preliminary results are presented. © 2016 Elsevier B.V.

Abbaneo, D., Abbas, M., Abbrescia, M., Abdelalim, A. A., Akl, M. A., Aboamer, O., . . . Zhang, A. (2016). Design of a constant fraction discriminator for the VFAT3 front-end ASIC of the CMS GEM detector. *Journal of Instrumentation, 11*(1).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84956999506&partnerID=40&md5=493c575241f103bfe734ad9e8c53e79a.
In this work the design of a constant fraction discriminator (CFD) to be used in the VFAT3 chip for the read-out of the triple-GEM detectors of the CMS experiment, is described. A prototype chip containing 8 CFDs was implemented using 130 nm CMOS technology and test results are shown. © CERN 2016.

Abdelhamid, E. H., Jayakumar, O. D., Kotari, V., Mandal, B. P., Rao, R., Naik, V. M., . . .

Tyagi, A. K. (2016). Multiferroic PVDF-Fe3O4 hybrid films with reduced graphene oxide and ZnO nanofillers. *RSC Advances, 6*(24), 20089-20094.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959143475&partnerID=40&md5=53ff04c509bd0e63b5f866c5eefd7fbf.
Flexible and self-standing polyvinylidene fluoride (PVDF) films loaded with nanofillers, reduced graphene oxide (RGO), zinc oxide (ZnO) and magnetic iron oxide (Fe3O4) nanoparticles, were prepared by a solvent casting method. The crystallinity, morphology and structure of these films were studied using XRD, SEM, FTIR and Raman spectroscopy. FTIR studies reveal a higher percentage of polar ferroelectric β-phase (~80%) in both pristine PVDF and PVDF-RGO films, whereas the addition of nanofillers, Fe3O4 and ZnO, resulted in a reduced amount of β-phase (~50%) in the films. Of all the films studied, PVDF-RGO shows an enhanced dielectric constant as well as maximum electric polarization. On the other hand, Fe3O4 loaded-PVDF composite films exhibit reduced values of both dielectric constant and electric polarization. A weak magneto-dielectric behavior is observed in Fe3O4 loaded PVDF nanocomposite films at room temperature with a coupling constant ~0.04%. © The Royal Society of Chemistry 2016.

The ALICE Collaboration. (2016). HΛ3 and H[U+203E]Λ-3 production in Pb-Pb collisions at sNN=2.76 TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 754*, 360-372.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957800966&partnerID=40&md5=58b710f5488a1c7536374d8b367a029f.
The production of the hypertriton nuclei HΛ3 and H[U+203E]Λ-3 has been measured for the first time in Pb-Pb collisions at sNN=2.76 TeV with the ALICE experiment at LHC. The pT-integrated HΛ3 yield in one unity of rapidity, dN/dy×B.R.(HΛ3→He3,π-)=(3.86±0.77(stat.)±0.68(syst.))×10-in the 0-10% most central collisions, is consistent with the predictions from a statistical thermal model using the same temperature as for the light hadrons. The coalescence parameter B3 shows a dependence on the transverse momentum, similar to the B2 of deuterons and the B3 of 3He nuclei. The ratio of yields S3=HΛ3/(He3×Λ/p) was measured to be S3=0.60±0.13(stat.)±0.21(syst.) in 0-10% centrality events; this value is compared to different theoretical models. The measured S3 is compatible with thermal model predictions. The measured HΛ3 lifetime, τ=181-39+54(stat.)±33(syst.)ps is in agreement within 1σ with the world average value. © 2016 CERN for the benefit of the ALICE Collaboration.

The ALICE Collaboration. (2016). Measurement of electrons from heavy-flavour hadron decays in p-Pb collisions at √sNN=5.02TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 754*, 81-93.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84956686455&partnerID=40&md5=e38b1f8b208dd397ecc0113777542d00.
The production of electrons from heavy-flavour hadron decays was measured as a function of transverse momentum (pT) in minimum-bias p-Pb collisions at sNN=5.02 TeV using the ALICE detector at the LHC. The measurement covers the pT interval 0.5<pT<12 GeV/c and the rapidity range -1.065<ycms<0.135 in the centre-of-mass reference frame. The contribution of electrons from background sources was subtracted using an invariant mass approach. The nuclear modification factor RpPb was calculated by comparing the pT-differential invariant cross

section in p-Pb collisions to a pp reference at the same centre-of-mass energy, which was obtained by interpolating measurements at s=2.76 TeV and s=7 TeV. The RpPb is consistent with unity within uncertainties of about 25%, which become larger for pT below 1 GeV/c. The measurement shows that heavy-flavour production is consistent with binary scaling, so that a suppression in the high-pT yield in Pb-Pb collisions has to be attributed to effects induced by the hot medium produced in the final state. The data in p-Pb collisions are described by recent model calculations that include cold nuclear matter effects. © 2015 CERN for the benefit of the ALICE Collaboration.

The ALICE Collaboration. (2016). Study of cosmic ray events with high muon multiplicity using the ALICE detector at the CERN Large Hadron Collider. *Journal of Cosmology and Astroparticle Physics, 2016*(1).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958184309&partnerID=40&md5=342732cbb81fc2a734df133a880b80ef.
ALICE is one of four large experiments at the CERN Large Hadron Collider near Geneva, specially designed to study particle production in ultra-relativistic heavy-ion collisions. Located 52 meters underground with 28 meters of overburden rock, it has also been used to detect muons produced by cosmic ray interactions in the upper atmosphere. In this paper, we present the multiplicity distribution of these atmospheric muons and its comparison with Monte Carlo simulations. This analysis exploits the large size and excellent tracking capability of the ALICE Time Projection Chamber. A special emphasis is given to the study of high multiplicity events containing more than 100 reconstructed muons and corresponding to a muon areal density ρμ > 5.9 m-2. Similar events have been studied in previous underground experiments such as ALEPH and DELPHI at LEP. While these experiments were able to reproduce the measured muon multiplicity distribution with Monte Carlo simulations at low and intermediate multiplicities, their simulations failed to describe the frequency of the highest multiplicity events. In this work we show that the high multiplicity events observed in ALICE stem from primary cosmic rays with energies above 1016 eV and that the frequency of these events can be successfully described by assuming a heavy mass composition of primary cosmic rays in this energy range. The development of the resulting air showers was simulated using the latest version of QGSJET to model hadronic interactions. This observation places significant constraints on alternative, more exotic, production mechanisms for these events. © 2016 CERN for the benefit of the ALICE Collaboration.

Anithakumari, P., Mandal, B. P., Abdelhamid, E., Naik, R., & Tyagi, A. K. (2016). Enhancement of dielectric, ferroelectric and magneto-dielectric properties in PVDF-BaFe12O19 composites: A step towards miniaturizated electronic devices. *RSC Advances, 6*(19), 16073-16080.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958213772&partnerID=40&md5=0ecc4f9bb4cd26daa6facc1072fedba7.
Highly flexible inorganic-organic composite films of barium hexaferrite (BHF) nanoparticles and a polyvinylidene fluoride (PVDF) polymer with small but appreciable magneto-dielectric coupling have been fabricated at room temperature. The films have been thoroughly characterized by using different techniques like X-ray Diffraction (XRD), Fourier Transform

Infrared spectroscopy (FTIR) and Scanning Electron Microscopy (SEM). Coexistence of alpha and beta forms of PVDF has been established in undoped and doped PVDF. The amount of electro-active β phase of PVDF increases with an increase in filler (BHF) amount. Interestingly, dielectric permittivity of PVDF is enhanced up to eight times upon addition of the optimum amount of BHF. This increase in permittivity has been explained by the space charge polarization at the interfaces between the two phases of the composite and the formation of several micro-capacitors within the samples. The electrical and magnetic polarization measurements on the films confirm the composite materials are ferroelectric as well as ferromagnetic in nature. Subsequently, magneto-dielectric (MD) coupling measurements confirm the multiferroic nature of the composite films. © 2016 The Royal Society of Chemistry.

The BELLE Collaboration. (2015). Measurement of B0 → D- s K0 S π+ and B+ → D- sK+K+ branching fractions. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 91*(3). http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958739533&partnerID=40&md5=148ad7647e1809152d052c4b4865a357.
We report a measurement of the B0 and B+ meson decays to the D- sK0 Sπ+ and D- sK+K+ final states, respectively, using 657 × 106BB¯ pairs collected at the Y(4S) resonance with the Belle detector at the KEKB asymmetric-energy e+e+ collider. Using the D- s → φ π-, K∗(892)0K- and K0 SK- decay modes for the Ds reconstruction, we measure the following branching fractions: B(B0 → D- sK0 sπ+) = [0.47 ± 0.06(stat) ± 0.05(syst)] × 10-4 and B(B+ → D- sK+K+) = [0.93 ± 0.22(stat) ± 0.10(syst)] × 10-5. We find the ratio of the branching fraction of B+ → D- sK+K+ to that of the analogous Cabibbo-favored B+ → D- sK+π+ decay to be RB = 0.054 ± 0.013(stat) ± 0.006(syst), which is consistent with the naive factorization model. We also observe a deviation of the DsK invariant-mass distribution from the three-body phase-space model for both studied decays. © 2015 American Physical Society.

The BELLE Collaboration. (2015). Search for B+ → e+νe and B+ → μ+νμ decays using hadronic tagging. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 91*(5). http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958758379&partnerID=40&md5=3bae94f18480d0532c03124932912952.
We present a search for the rare leptonic decays B+ → e+νe and B+ → μ+νμ, using the full Y(4S) data sample of 772 × 106 B B¯ pairs collected with the Belle detector at the KEKB asymmetric-energy e+e- collider. One of the B mesons from the Y(4S) → B B¯ decay is fully reconstructed in a hadronic mode, while the recoiling side is analyzed for the signal decay. We find no evidence of a signal in any of the decay modes. Upper limits of the corresponding branching fractions are determined as B(B+ → e+νe) < 3.5 × 10-6 and B(B+ → μ+νμ) < 2.7 × 10-6 at 90% confidence level. © 2015 American Physical Society.

The CMS Collaboration. (2015). Constraints on the spin-parity and anomalous HVV couplings of the Higgs boson in proton collisions at 7 and 8 TeV. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 92*(1).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957729552&partnerID=40&md5=09aa11e6cb668bcf8ba21be3aecf0f9f.
The study of the spin-parity and tensor structure of the interactions of the recently discovered

Higgs boson is performed using the H→ZZ,Zγ∗,γ∗γ∗→4, H→WW→νν, and H→γγ decay modes. The full data set recorded by the CMS experiment during the LHC run 1 is used, corresponding to an integrated luminosity of up to 5.1fb-1 at a center-of-mass energy of 7 TeV and up to 19.7fb-1 at 8 TeV. A wide range of spin-two models is excluded at a 99% confidence level or higher, or at a 99.87% confidence level for the minimal gravitylike couplings, regardless of whether assumptions are made on the production mechanism. Any mixed-parity spin-one state is excluded in the ZZ and WW modes at a greater than 99.999% confidence level. Under the hypothesis that the resonance is a spin-zero boson, the tensor structure of the interactions of the Higgs boson with two vector bosons ZZ, Zγ, γγ, and WW is investigated and limits on eleven anomalous contributions are set. Tighter constraints on anomalous HVV interactions are obtained by combining the HZZ and HWW measurements. All observations are consistent with the expectations for the standard model Higgs boson with the quantum numbers JPC=0++. © 2015 CERN, for the CMS Collaboration.

The CMS Collaboration. (2015). Search for the standard model Higgs boson produced through vector boson fusion and decaying to bb¯. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 92*(3).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957729558&partnerID=40&md5=0be357c3deb671fff3f7fdc3c6617c63.
A first search is reported for a standard model Higgs boson (H) that is produced through vector boson fusion and decays to a bottom-quark pair. Two data samples, corresponding to integrated luminosities of 19.8fb-1 and 18.3fb-1 of proton-proton collisions at s=8TeV were selected for this channel at the CERN LHC. The observed significance in these data samples for a H→bb¯ signal at a mass of 125 GeV is 2.2 standard deviations, while the expected significance is 0.8 standard deviations. The fitted signal strength μ=σ/σSM=2.8-1.4+1.6. The combination of this result with other CMS searches for the Higgs boson decaying to a b-quark pair yields a signal strength of 1.0±0.4, corresponding to a signal significance of 2.6 standard deviations for a Higgs boson mass of 125 GeV. © 2015 CERN.

The CMS Collaboration. (2016). Measurement of the Top Quark Pair Production Cross Section in Proton-Proton Collisions at s =13 TeV. *Physical Review Letters, 116*(5).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959020636&partnerID=40&md5=43d097fe9863e4a56ae67dd50eac08b7.
The top quark pair production cross section is measured for the first time in proton-proton collisions at s=13 TeV by the CMS experiment at the CERN LHC, using data corresponding to an integrated luminosity of 43 pb-1. The measurement is performed by analyzing events with at least one electron and one muon of opposite charge, and at least two jets. The measured cross section is 746±58(stat)±53(syst)±36(lumi) pb, in agreement with the expectation from the standard model. © 2016 CERN, for the CMS Collaboration. Published by the American Physical Society under the terms of the »http://creativecommons.org/licenses/by/3.0/» Creative Commons Attribution 3.0 License. Further distribution of this work must maintain attribution to the author(s) and the published article's title, journal citation, and DOI.

The CMS Collaboration. (2016). Search for new phenomena in monophoton final states in

proton-proton collisions at √s=TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 755*, 102-124.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957916468&partnerID=40&md5=30ba95fe6e53f5df00a1a3a6d59c681b.
Results are presented from a search for new physics in final states containing a photon and missing transverse momentum. The data correspond to an integrated luminosity of 19.6 fb-1 collected in proton-proton collisions at √s=TeV with the CMS experiment at the LHC. No deviation from the standard model predictions is observed for these final states. New, improved limits are set on dark matter production and on parameters of models with large extra dimensions. In particular, the first limits from the LHC on branon production are found and significantly extend previous limits from LEP and the Tevatron. An upper limit of 14.0 fb on the cross section is set at the 95% confidence level for events with a monophoton final state with photon transverse momentum greater than 145 GeV and missing transverse momentum greater than 140 GeV. © 2016 CERN for the benefit of the CMS Collaboration.

The CMS Collaboration. (2016). Search for the production of an excited bottom quark decaying to tW in proton-proton collisions at (Formula Presented.) TeV. *Journal of High Energy Physics, 2016*(1), 1-44.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957803812&partnerID=40&md5=f8424ebd7ceaee9a589df7fb1cb92454.
A search is presented for a singly produced excited bottom quark (b*) decaying to a top quark and a W boson in the all-hadronic, lepton+jets, and dilepton final states in proton-proton collisions at s=8(Formula Presented.)TeV recorded by the CMS experiment at the CERN LHC. Data corresponding to an integrated luminosity of 19.7 fb−1 are used. No significant excess of events is observed with respect to standard model expectations. We set limits at 95% confidence on the product of the b* quark production cross section and its branching fraction to tW. The cross section limits are interpreted for scenarios including left-handed, right-handed, and vector-like couplings of the b* quark and are presented in the two-dimensional coupling plane based on the production and decay coupling constants. The masses of the left-handed, right-handed, and vector-like b* quark states are excluded at 95% confidence below 1390, 1430, and 1530 GeV, respectively, for benchmark couplings. This analysis gives the most stringent limits on the mass of the b∗ quark to date.[Figure not available: see fulltext.] © 2016, The Author(s).

The CMS Collaboration. (2016). Search for W' decaying to tau lepton and neutrino in proton-proton collisions at s=8 TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 755*, 196-216.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958949879&partnerID=40&md5=46e481f703dd808143dc679da1470636.
The first search for a heavy charged vector boson in the final state with a tau lepton and a neutrino is reported, using 19.7 fb-1 of LHC data at s=8 TeV. A signal would appear as an excess of events with high transverse mass, where the standard model background is low. No excess is observed. Limits are set on a model in which the W' decays preferentially to fermions of the third generation. These results substantially extend previous constraints on this model. Masses below 2.0 to 2.7 TeV are excluded, depending on the model parameters. In addition, the

existence of a W' boson with universal fermion couplings is excluded at 95% confidence level, for W' masses below 2.7 TeV. For further reinterpretation a model-independent limit on potential signals for various transverse mass thresholds is also presented. © 2016 CERN for the benefit of the CMS Collaboration.

The CMS Collaboration. (2016). Searches for a heavy scalar boson H decaying to a pair of 125 GeV Higgs bosons hh or for a heavy pseudoscalar boson A decaying to Zh, in the final states with h→ττ. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 755*, 217-244.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959016937&partnerID=40&md5=fc3bda498fa4f425b8980679cb5773e3.
A search for a heavy scalar boson H decaying into a pair of lighter standard-model-like 125 GeV Higgs bosons hh and a search for a heavy pseudoscalar boson A decaying into a Z and an h boson are presented. The searches are performed on a data set corresponding to an integrated luminosity of 19.7 fb-1 of pp collision data at a centre-of-mass energy of 8 TeV, collected by CMS in 2012. A final state consisting of two τ leptons and two b jets is used to search for the H→hh decay. A final state consisting of two τ leptons from the h boson decay, and two additional leptons from the Z boson decay, is used to search for the decay A→Zh. The results are interpreted in the context of two-Higgs-doublet models. No excess is found above the standard model expectation and upper limits are set on the heavy boson production cross sections in the mass ranges 260<mH<350 GeV and 220<mA<350 GeV. © 2016 CERN for the benefit of the CMS Collaboration.

The CMS Collaboration. (2016). Study of B Meson Production in p+Pb Collisions at √sNN = 5.02 TeV Using Exclusive Hadronic Decays. *Physical Review Letters, 116*(3).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957026548&partnerID=40&md5=26710a19ff8090f07b2b82d476c664e5.
The production cross sections of the B+, B0, and Bs 0 mesons, and of their charge conjugates, are measured via exclusive hadronic decays in p+Pb collisions at the center-of-mass energy √SNN = 5.02 TeV with the CMS detector at the CERN LHC. The data set used for this analysis corresponds to an integrated luminosity of 34.6 nb-1. The production cross sections are measured in the transverse momentum range between 10 and 60 GeV/c. No significant modification is observed compared to proton-proton perturbative QCD calculations scaled by the number of incoherent nucleon-nucleon collisions. These results provide a baseline for the study of in-medium b quark energy loss in Pb+Pb collisions. © 2016 CERN.

The CMS Collaboration. (2016). Transverse momentum spectra of inclusive b jets in pPb collisions at √sNN=5.02 TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 754*, 59-80.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957871802&partnerID=40&md5=f3ba918162b079b41d7d4e3beac57a46.
We present a measurement of b jet transverse momentum (pT) spectra in proton-lead (pPb) collisions using a dataset corresponding to about 35 nb-1 collected with the CMS detector at the LHC. Jets from b quark fragmentation are found by exploiting the long lifetime of hadrons

containing a b quark through tagging methods using distributions of the secondary vertex mass and displacement. Extracted cross sections for b jets are scaled by the effective number of nucleon-nucleon collisions and are compared to a reference obtained from pythia simulations of pp collisions. The pythia-based estimate of the nuclear modification factor is found to be 1.22±0.15(stat+syst pPb)±0.27(syst pythia) averaged over all jets with pT between 55 and 400 GeV/c and with |ηlab|<2. We also compare this result to predictions from models using perturbative calculations in quantum chromodynamics. © 2016 CERN for the benefit of the CMS Collaboration.

Kharzeev, D. E., Liao, J., Voloshin, S. A., & Wang, G. (2016). Chiral magnetic and vortical effects in high-energy nuclear collisions-A status report. *Progress in Particle and Nuclear Physics*. http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84956669572&partnerID=40&md5=3b8191fbe249e0bb6a98a1f284454252.
The interplay of quantum anomalies with magnetic field and vorticity results in a variety of novel non-dissipative transport phenomena in systems with chiral fermions, including the quark-gluon plasma. Among them is the Chiral Magnetic Effect (CME)-the generation of electric current along an external magnetic field induced by chirality imbalance. Because the chirality imbalance is related to the global topology of gauge fields, the CME current is topologically protected and hence non-dissipative even in the presence of strong interactions. As a result, the CME and related quantum phenomena affect the hydrodynamical and transport behavior of strongly coupled quark-gluon plasma, and can be studied in relativistic heavy ion collisions where strong magnetic fields are created by the colliding ions. Evidence for the CME and related phenomena has been reported by the STAR Collaboration at Relativistic Heavy Ion Collider at BNL, and by the ALICE Collaboration at the Large Hadron Collider at CERN. The goal of the present review is to provide an elementary introduction into the physics of anomalous chiral effects, to describe the current status of experimental studies in heavy ion physics, and to outline the future work, both in experiment and theory, needed to eliminate the existing uncertainties in the interpretation of the data. © 2016 Elsevier B.V.

Shahini, A., Xia, J., Zhou, Z., Zhao, Y., & Cheng, M. M. C. (2016). Versatile Miniature Tunable Liquid Lenses Using Transparent Graphene Electrodes. *Langmuir, 32*(6), 1658-1665. http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958825080&partnerID=40&md5=321a92d4345478339588e093c2eab57f.
This paper presents, for the first time, versatile and low-cost miniature liquid lenses with graphene as electrodes. Tunable focal length is achieved by changing the droplet curvature using electrowetting on dielectric (EWOD). Ionic liquid and KCl solution are utilized as lens liquid on the top of a flexible Teflon-coated PDMS/parylene membrane. Transparent and flexible, graphene allows transmission of visible light as well as large deformation of the polymer membrane to achieve requirements for different lens designs and to increase the field of view without damaging of electrodes. The tunable range for the focal length is between 3 and 7 mm for a droplet with a volume of 3 μL. The visualization of bone marrow dendritic cells is demonstrated by the liquid lens system with a high resolution (456 lp/mm). © 2016 American Chemical Society.

The STAR Collaboration. (2016). Centrality and Transverse Momentum Dependence of Elliptic Flow of Multistrange Hadrons and φ Meson in Au+Au Collisions at sNN =200 GeV. *Physical Review Letters, 116*(6).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958025609&partnerID=40&md5=9ede54bcad30e665a708fa652606849c.
We present high precision measurements of elliptic flow near midrapidity (|y|<1.0) for multistrange hadrons and φ meson as a function of centrality and transverse momentum in Au+Au collisions at center of mass energy sNN=200 GeV. We observe that the transverse momentum dependence of φ and Ω v2 is similar to that of π and p, respectively, which may indicate that the heavier strange quark flows as strongly as the lighter up and down quarks. This observation constitutes a clear piece of evidence for the development of partonic collectivity in heavy-ion collisions at the top RHIC energy. Number of constituent quark scaling is found to hold within statistical uncertainty for both 0%-30% and 30%-80% collision centrality. There is an indication of the breakdown of previously observed mass ordering between φ and proton v2 at low transverse momentum in the 0%-30% centrality range, possibly indicating late hadronic interactions affecting the proton v2. © 2016 American Physical Society.

PSYCHOLOGY

Brummelte, S., & Galea, L. A. M. (2016). Postpartum depression: Etiology, treatment and consequences for maternal care. *Hormones and Behavior, 77*, 153-166.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84956579737&partnerID=40&md5=3a9bea7329f314f0524759f4ecd46223.
This article is part of a Special Issue "Parental Care". Pregnancy and postpartum are associated with dramatic alterations in steroid and peptide hormones which alter the mothers' hypothalamic pituitary adrenal (HPA) and hypothalamic pituitary gonadal (HPG) axes. Dysregulations in these endocrine axes are related to mood disorders and as such it should not come as a major surprise that pregnancy and the postpartum period can have profound effects on maternal mood. Indeed, pregnancy and postpartum are associated with an increased risk for developing depressive symptoms in women. Postpartum depression affects approximately 10-15% of women and impairs mother-infant interactions that in turn are important for child development. Maternal attachment, sensitivity and parenting style are essential for a healthy maturation of an infant's social, cognitive and behavioral skills and depressed mothers often display less attachment, sensitivity and more harsh or disrupted parenting behaviors, which may contribute to reports of adverse child outcomes in children of depressed mothers. Here we review, in honor of the "father of motherhood", Jay Rosenblatt, the literature on postnatal depression in the mother and its effect on mother-infant interactions. We will cover clinical and pre-clinical findings highlighting putative neurobiological mechanisms underlying postpartum depression and how they relate to maternal behaviors and infant outcome. We also review animal models that investigate the neurobiology of maternal mood and disrupted maternal care. In particular, we discuss the implications of endogenous and exogenous manipulations of glucocorticoids on maternal care and mood. Lastly we discuss interventions during gestation and postpartum that may improve maternal symptoms and behavior and thus may alter

developmental outcome of the offspring. © 2015 Elsevier Inc.

Burger, A. J., Lumley, M. A., Carty, J. N., Latsch, D. V., Thakur, E. R., Hyde-Nolan, M. E., . . . Schubiner, H. (2016). The effects of a novel psychological attribution and emotional awareness and expression therapy for chronic musculoskeletal pain: A preliminary, uncontrolled trial. *Journal of Psychosomatic Research, 81*, 1-8.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959064269&partnerID=40&md5=f0abaefa8acc76e3b64b200c0711ad2d.
Objective: Current psychological and behavioral therapies for chronic musculoskeletal pain only modestly reduce pain, disability, and distress. These limited effects may be due to the failure of current therapies: a) to help patients learn that their pain is influenced primarily by central nervous system psychological processes; and b) to enhance awareness and expression of emotions related to psychological trauma or conflict. Methods: We developed and conducted a preliminary, uncontrolled test of a novel psychological attribution and emotional awareness and expression therapy that involves an initial individual consultation followed by 4 group sessions. A series of 72 patients with chronic musculoskeletal pain had the intervention and were assessed at baseline, post-treatment, and 6-month follow-up. Results: Participation and satisfaction were high and attrition was low. Intent-to-treat analyses found significant improvements in hypothesized change processes: psychological attributions for pain, emotional awareness, emotional approach coping, and alexithymia. Pain, interference, depression, and distress showed large effect size improvements at post-treatment, which were maintained or even enhanced at 6 months. Approximately two-thirds of the patients improved at least 30% in pain and other outcomes, and one-third of the patients improved 70%. Changes in attribution and emotional processes predicted outcomes. Higher baseline depressive symptoms predicted greater improvements, and outcomes were comparable for patients with widespread vs. localized pain.Conclusion: This novel intervention may lead to greater benefits than available psychological interventions for patients with chronic musculoskeletal pain, but needs controlled testing. © 2015 Elsevier Inc.

Fuertes, M., Faria, A., Beeghly, M., & Lopes-dos-Santos, P. (2016). The effects of parental sensitivity and involvement in caregiving on mother-infant and father-infant attachment in a portuguese sample. *Journal of Family Psychology, 30*(1), 147-156.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957976531&partnerID=40&md5=6d687ef561134f85b2325a7c738a58a3.
In the present longitudinal study, we investigated attachment quality in Portuguese mother-infant and in father-infant dyads, and evaluated whether attachment quality was related to parental sensitivity during parent-infant social interaction or to the amount of time each parent spent with the infant during play and in routine caregiving activities (e.g., feeding, bathing, play). The sample consisted of 82 healthy full-term infants (30 girls, 53 boys, 48 first born), and their mothers and fathers from mostly middle-class households. To assess parental sensitivity, mothers and fathers were independently observed during free play interactions with their infants when infants were 9 and 15 months old. The videotaped interactions were scored by masked coders using the Crittenden's CARE-Index. When infants were 12 and 18 months old, mother-infant and father-infant dyads were videotaped during an adaptation of Ainsworth's

Strange Situation. Parents also described their level of involvement in infant caregiving activities using a Portuguese version of the McBride and Mills Parent Responsibility Scale. Mothers were rated as being more sensitive than fathers during parent-infant free play at both 9 and 15 months. There also was a higher prevalence of secure attachment in mother-infant versus father-infant dyads at both 12 and 18 months. Attachment security was predicted by the amount of time mothers and fathers were involved in caregiving and play with the infant, and with parents' behavior during parent-infant free play.

Hanks, R. A., Rapport, L. J., Waldron Perrine, B., & Millis, S. R. (2016). Correlates of Resilience in the First 5 Years After Traumatic Brain Injury. *Rehabilitation Psychology*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84957696477&partnerID=40&md5=f2422c1f97fb27aad2be0be98d3292a7.
Purpose/Objective: To examine resilience in the context of adjustment to traumatic brain injury (TBI), including the relative roles of demographic and theoretically related constructs such as coping, social support, and positive affectivity on resilience within the first 5 years postinjury. Research Method/Design: This was a cross-sectional, observational study of 67 persons with medically documented mild complicated to severe TBI. Participants completed a battery of measures including cognitive tests; questionnaires assessing self-report of emotional symptoms, perceived social support, and coping style; and a measure of resilience. Results: Approximately 60% of the sample endorsed moderate to high levels of resilience during the first 5 years postinjury. Brain injury severity, premorbid intelligence, and cognitive flexibility did not predict resilience, as measured by the Connor-Davidson Resilience Scale. By contrast, task-oriented coping and perceived social support were strong and unique covariates of resilience. Positive and negative affectivity were related to resilience but were not unique covariates of it in the presence of task-oriented coping and perceived social support. Discriminant validity of resilience as a concept and the means of assessing it was supported by findings that emotion-oriented and avoidance coping were not meaningfully related to resilience. Conclusions/Implications: Overall, the findings indicate that the majority of individuals in this sample reported high levels of resilience after brain injury and that correlates of resilience in adults with TBI is similar to that observed in adults without the history of cognitive impairment. (PsycINFO Database Record © 2016 APA, all rights reserved).

McGonagle, A., Roebuck, A., Diebel, H., Aqwa, J., Fragoso, Z., & Stoddart, S. (2016). Anticipated work discrimination scale: a chronic illness application. *Journal of Managerial Psychology, 31*(1), 61-78.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84956682401&partnerID=40&md5=625851ea88ce46284913206761546d2b.
Purpose – The authors sought initial validity evidence for a measure of anticipated discrimination in the workplace using three samples of working adults with various chronic illnesses. The purpose of this paper is to propose a single factor structure, correlations with stigma dimensions, discriminant validity from similar scales, and incremental validity in predicting work-related outcomes. Design/methodology/approach – Adults working at least 20 hours per week with various chronic illnesses (Sample 1 n=332, Sample 2 n=193, Sample 3 n=230) voluntarily completed an online survey. Structural equation modeling and hierarchical

multiple regression were used to analyze the data. Findings – Results supported the proposed single-factor structure, along with proposed correlations with strain, and job attitudes (job satisfaction, affective commitment, and both procedural justice). Discriminant validity was observed between anticipated discrimination and procedural justice perceptions and perceived impact on performance. The scale demonstrated incremental validity in predicting strain beyond the relevant controls in all three samples, although it only demonstrated incremental validity in predicting job satisfaction in Samples 1 and 3 and affective commitment in Sample 1. Research limitations/implications – Study limitations include the use of single-source, cross-sectional data, omission of a non-stigmatized sample, and a deductive approach to item generation. Future research should attempt to validate the scale on other stigmatized worker populations. Practical implications – Organizations may use this scale to monitor employees' perceptions of anticipated discrimination and researchers may use it as a measure of a workplace stressor. Originality/value – The vast majority of existing stigma and discrimination scales do not specifically address the workplace context. This study contributes to the literature by providing psychometric information for a workplace anticipated discrimination scale using samples from an under-represented worker population. © 2016, © Emerald Group Publishing Limited.

McGonagle, A. K., Childress, N. M., Walsh, B. M., & Bauerle, T. J. (2016). Can Civility Norms Boost Positive Effects of Management Commitment to Safety? *Journal of Psychology: Interdisciplinary and Applied*, 1-15.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959041288&partnerID=40&md5=7d88d133449220f53c190989e88ec432.
We proposed that civility norms would strengthen relationships between management commitment to safety and workers' safety motivation, safety behaviors, and injuries. Survey data were obtained from working adults in hazardous jobs—those for which physical labor is required and/or a realistic possibility of physical injury is present (N = 290). Results showed that management commitment positively related to workers' safety motivation, safety participation, and safety compliance, and negatively related to minor injuries. Furthermore, management commitment to safety displayed a stronger positive relationship with safety motivation and safety participation, and a stronger negative relationship with minor worker injuries when civility norms were high (versus low). The results confirm existing known relationships between management commitment to safety and worker safety motivation and behavior; furthermore, civility norms facilitate the relationships between management commitment to safety and various outcomes important to worker safety. In order to promote an optimally safe working environment, managers should demonstrate a commitment to worker safety and promote positive norms for interpersonal treatment between workers in their units. © 2016 Taylor & Francis Group, LLC

Northerner, L. M., Trentacosta, C. J., & McLear, C. M. (2016). Negative Affectivity Moderates Associations Between Cumulative Risk and At-Risk Toddlers' Behavior Problems. *Journal of Child and Family Studies, 25*(2), 691-699.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84958161191&partnerID=40&md5=f98d6a8203d9dea282afd40f3991650c.
This study examined cumulative risk, temperament traits, and their interplay as predictors of

internalizing, externalizing, and sleep problems in at-risk toddlers. Participants were 104 low-income mother–toddler dyads recruited from women, infants, and children sites in a large city. The sample was primarily African American, and mothers were 21 years of age or younger at the child's birth. The dyads were assessed when the toddlers were approximately 18 months old and again at 24 months of age. Though all toddlers were from low-income families with young mothers, the families varied in the degree to which other contextual risk factors were present. A cumulative risk index was calculated based on five contextual factors: maternal education, neighborhood dangerousness, social support, household overcrowding and single parenting. In multiple regressions, cumulative risk predicted sleep and externalizing problems. In addition, negative affectivity predicted all three domains of problem behaviors, effortful control predicted fewer externalizing problems, and surgency predicted fewer internalizing problems. Moreover, low negative affectivity buffered the association between cumulative risk and both internalizing and sleep problems. These findings suggest that it is important to consider children's temperament traits in conjunction with the constellation of family risks when designing prevention programs to reduce the prevalence of behavior problems early in life.

Spielmann, S. S., & MacDonald, G. (2016). Nice guys finish first when presented second: Responsive daters are evaluated more positively following exposure to unresponsive daters. *Journal of Experimental Social Psychology, 64*, 99-105.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959232576&partnerID=40&md5=0c75c7cd6e60373adf0052f377eb717f.
Decisions about who to date are increasingly being made while viewing a large pool of dating prospects simultaneously or sequentially (e.g., online dating). The present research explores how the order in which dating prospects are evaluated affects the role in dating decisions of a variable crucial to relationship success - partner responsiveness. In Study 1, participants viewed dating profiles varying in physical attractiveness and responsiveness. Some participants viewed responsive profiles first whereas others viewed unresponsive profiles first. Results revealed that responsive targets were rated more favorably following exposure to unresponsive targets, regardless of level of attractiveness. Study 2 specifically targeted how contrast effects affect romantic evaluations of a physically unattractive, yet responsive, target. Results again revealed that unattractive, responsive targets were viewed more favorably after exposure to unresponsive dating prospects, regardless of these unresponsive prospects' physical attractiveness. These results highlight the importance of the context in which dating decisions are made.

van Middendorp, H., Kool, M. B., van Beugen, S., Denollet, J., Lumley, M. A., & Geenen, R. (2016). Prevalence and relevance of Type D personality in fibromyalgia. *General Hospital Psychiatry, 39*, 66-72.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959192888&partnerID=40&md5=76a918552bcc1880a93c882c3e92317b.
Objective: Distressed (Type D) personality, combining high negative affectivity and social inhibition, is linked to poor health in various populations. Because patients with fibromyalgia experience high negative affect and show signs of social inhibition, this study aimed to examine

the prevalence of Type D's components and their associations with health in an additive (worse health with both components present) or synergistic way (components amplifying each other's effects). Method: Type D personality and physical and mental health were assessed online by 558 patients with self-reported fibromyalgia (94% women, age 47±11 (21-77) years) by the Type D Scale-14 and RAND-36 Health Status Inventory. Results: Using the standard cutscores, Type D personality was present in 56.5% of patients. Negative affectivity alone and combined with social inhibition was associated with worse mental and, more limited, physical health, but no interactive (synergistic) associations were found. Conclusions: Type D personality in fibromyalgia exceeds prevalence estimates in general, cardiovascular and chronic pain populations. Some indication of an additive but not of a synergistic effect was found, particularly for mental health, with clearly the largest associations for negative affectivity. The high prevalence of Type D's components may have specific treatment implications. © 2016 Elsevier Inc.

Workman, J. L., Gobinath, A. R., Kitay, N. F., Chow, C., Brummelte, S., & Galea, L. A. M. (2016). Parity modifies the effects of fluoxetine and corticosterone on behavior, stress reactivity, and hippocampal neurogenesis. *Neuropharmacology, 105*, 443-453.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84959016751&partnerID=40&md5=2db0bf8f48003028340585b8e718a2bd.
The postpartum confers considerable risk for developing depression. Depressed patients have elevated cortisol concentrations and impaired hypothalamic-pituitary-adrenal (HPA) axis negative feedback. Chronic stress or corticosterone (CORT) induces a depressive-like phenotype in rodents, including during the postpartum. The present study examined whether nulliparous and postpartum rats were differentially vulnerable to chronic high CORT and whether fluoxetine (FLX) would differentially alter the brain, behavior, and neuroendocrine function depending on reproductive experience. Nulliparous and postpartum female Sprague-Dawley rats were divided into 4 groups that received 21 d of injections of CORT or oil plus FLX or saline. CORT reduced maternal behaviors whereas FLX reversed CORT-induced decreases in maternal care. CORT increased immobility in the forced swim test (FST), but FLX did not significantly alter immobility in either nulliparous or postpartum rats. Dams spent less time immobile and had lower CORT concentrations after the FST compared with nulliparae, indicating that aspects of the postpartum period may provide resilience against a depressive-like phenotype. Both CORT and parity reduced neurogenesis (doublecortin expression) in the dentate gyrus. FLX-treated rats had lower CORT concentrations following the FST and more immature neurons, but only in the nulliparous, and not postpartum, groups. These data suggest that the postpartum may inherently protect against some deleterious effects of high CORT but also confer resistance to the neurogenic and endocrine effects of FLX. Our findings are important for understanding how females in different reproductive states respond to glucocorticoids and antidepressants.