บทความที่น่าสนใจประจำเดือน เมษายน 2556

Title :	Culture under low physiological oxygen conditions improves the stemness and quality of induced pluripotent stem cells
Author :	Chao-Wan Guo, Miho Kawakatsu, Marie Idemitsu, Yoshishige Urata, Shinji Goto, Yusuke Ono, Kimikazu Hamano, Tao-Sheng Li
Journal :	Journal of Cellular Physiology, Accepted manuscript online: 15 APR 2013, DOI: 10.1002/jcp.24389
Abstract :	The ex vivo expansion of stem cells under low physiological oxygen (O2) conditions has been demonstrated to improve the stemness and genomic stability of the cells. We investigated whether low-oxygen culture would be beneficial for the culture of induced pluripotent stem (iPS) cells. Two human iPS cell lines (201B7 and 253G1) were used for the experiments. Cells expanded from a single colony of each cell line were initiated for culture in 2.5% O2, 5% O2, or 20% O2 and maintained for 2 months in parallel. The levels of intracellular and mitochondrial reactive oxygen species did not differ between the cells cultured under different conditions. More colonies of uniformly smaller size were observed at 2.5% and 5% O2 than at 20% O2. All of these iPS colonies that expanded under the various oxygen conditions stained positively for Oct3/4, Nanog, SSEA-4, and ALP. However, Western blot analysis showed that the iPS cells cultured at 2.5% and 5% O2 expressed significantly more Nanog but less 53BP1 than those cultured at 20% O2. Data from an array CGH showed no significant chromosomal abnormalities, although some genes involved in cellular and metabolic processes were amplified in the low oxygen culture, particularly at 2.5% O2. Our data suggest that low physiological oxygen culture could improve the stemness and quality of iPS cells, a result that might be associated with the amplification of genes involved in metabolic and cellular processes. Long-term culture will be necessary to confirm whether low physiological oxygen levels also improve genomic stability. J. Cell. Physiol. © 2013 Wiley Periodicals, Inc.
Database :	Wiley Online Library

Title :	1α,25-dihydroxyvitamin D3 stimulates activin A production to fine-tune osteoblast-induced mineralization
Author :	V.J. Woeckel, B.C.J. van der Eerden, M. Schreuders-Koedam, M. Eijken, J.P.T.M. van Leeuwen
Journal :	Journal of Cellular Physiology, Accepted manuscript online: 15 APR 2013, DOI: 10.1002/jcp.24388
Abstract :	In healthy bones mineralization has to be tightly controlled to avoid pathological phenotypes. In this study we investigated interactions between 1α,25$(OH)_2D_3$ (1,25D3) and activin A in the regulation of osteoblast induced mineralization. In human osteoblast cultures we demonstrated that besides stimulation of mineralization, 1,25D3 also induced activin A, a strong inhibitor of mineralization. Simultaneously, follistatin (FST), the natural antagonist of activin A, was down-regulated by1,25D3. This resulted in an increase in activin A activity during 1,25D3 treatment. We also showed that in 1,25D3-treated osteoblasts, mineralization can be further increased when activin A activity was abrogated by adding exogenous FST. This observation implies that, besides stimulation of mineralization, 1,25D3 also controls activin A-mediated inhibition of mineralization. Besides activin A, 1,25D3 also induces osteocalcin (BGLAP), another inhibitor of mineralization. Warfarin, which has

	been shown to inactivate osteocalcin, increased 1,25D3-induced mineralization. Interaction between these two systems became evident from the synergistic increase in *BGLAP* expression upon blocking activin activity in 1,25D3-treated cultures. In conclusion, we demonstrate that 1,25D3 stimulation of mineralization by human osteoblasts is suppressed by concomitant induction of inhibitors of mineralization. Mineralization induction by 1,25D3 may actually be controlled via interplay with activin A and osteocalcin. Finally, this complex regulation of mineralization substantiates the significance of tight control of mineralization to prevent excessive mineralization and consequently reduction in bone quality and strength. J. Cell. Physiol. © 2013 Wiley Periodicals, Inc.
Database :	Wiley Online Library

Title :	Allometry of factor VIII and informed scaling of next-generation therapeutic proteins
Author :	Matthew P. Kosloski, Dipak S. Pisal, Donald E. Mager and Sathy V. Balu-Iyer
Journal :	Journal of Pharmaceutical Sciences, Early View: Article first published online: 25 APR 2013, DOI: 10.1002/jps.23566
Abstract :	Allometric scaling has been applied to the pharmacokinetics (PK) of factor VIII (FVIII), but published relationships are based on relatively small subsets of available data. Numerous next-generation forms of FVIII are being developed (e.g., Fc fusion, PEGylated, and liposomal formulations) and traditional PK scaling of these products would not incorporate the wealth of existing knowledge for current FVIII therapy in humans. We conducted a meta-analysis and developed allometric relationships of FVIII from over 100 PK studies collected from literature. Normalized Wajima curves were used to relate mean FVIII profiles between species. An "informed scaling" approach was derived for predicting first-in-human PK parameters and demonstrated with a case study for an Fc fusion FVIII. NCA values for FVIII PK were well described by the allometric equations CL = 6.59 W0.85 and Vss = 65.0 W0.97. A subset of studies characterized by two-compartment modeling showed strong linearity in scaling of total clearance (CL) and central volume, but more variability in distributional CL and peripheral volume. Wajima curves for FVIII superimposed across species and the disposition of Fc fusion FVIII in humans was well predicted by "informed scaling." This approach might be generally applicable for predicting human PK of next-generational therapeutics. © 2013 Wiley Periodicals, Inc. and the American Pharmacists Association J Pharm Sci
Database :	Wiley Online Library

Title :	Body mass index and incident coronary heart disease in women: a population-based prospective study
Author :	Dexter Canoy, Benjamin J Cairns, Angela Balkwill, et al.
Journal :	BMC Medicine 2013, 11:87 (doi:10.1186/1741-7015-11-87)
Abstract :	A high body mass index (BMI) is associated with an increased risk of mortality from coronary heart disease (CHD); however, a low BMI may also be associated with an increased mortality risk. There is limited information on the relation of incident CHD risk across a wide range of BMI, particularly in women. We examined the relation between BMI and incident CHD overall and across different risk factors of the disease in the Million Women Study.
Database :	Biomedcentral

Title :	Formation of biofilms under phage predation: considerations concerning a biofilm increase
Author :	Zeinab Hosseinidousta, Nathalie Tufenkjia & Theo G.M. van de Venb
Journal :	Biofouling: The Journal of Bioadhesion and Biofilm Research, 2013, Volume 29, Issue 4, pages 457-468
Abstract :	Bacteriophages are emerging as strong candidates for combating bacterial biofilms. However, reports indicating that host populations can, in some cases, respond to phage predation by an increase in biofilm formation are of concern. This study investigates whether phage predation can enhance the formation of biofilm and if so, if this phenomenon is governed by the emergence of phage-resistance or by non-evolutionary mechanisms (eg spatial refuge). Single-species biofilms of three bacterial pathogens (Pseudomonas aeruginosa, Salmonella enterica serotype Typhimurium, and Staphylococcus aureus) were pretreated and post-treated with species-specific phages. Some of the phage treatments resulted in an increase in the levels of biofilm of their host. It is proposed that the phenotypic change brought about by acquiring phage resistance is the main reason for the increase in the level of biofilm of P. aeruginosa. For biofilms of S. aureus and S. enterica Typhimurium, although resistance was detected, increased formation of biofilm appeared to be a result of non-evolutionary mechanisms.
Database :	Taylor & Francis Online Journals

Title :	Reversal of multidrug resistance by stimuli-responsive drug delivery systems for therapy of tumor
Author :	Qi Yin, Jianan Shen, Zhiwen Zhang, Haijun Yu, Yaping Li
Journal :	Advanced Drug Delivery Reviews,In Press, Available online 20 April 2013, http://dx.doi.org/10.1016/j.addr.2013.04.011
Abstract :	Multidrug resistance (MDR) is a major obstacle to successful cancer therapy, especially for chemotherapy. The new drug delivery system (DDS) provides promising approaches to reverse MDR, for which the poor cellular uptake and insufficient intracellular drug release remain rate-limiting steps for reaching the drug concentration level within the therapeutic window. Stimulus-coupled drug delivery can control the drug-releasing pattern temporally and spatially, and improve the accumulation of chemotherapeutic agents at targeting sites. In this review, the applications of DDS which is responsive to different types of stimuli in MDR cancer therapy is introduced, and the design, construction, stimuli-sensitivity and the effect to reverse MDR of the stimuli-responsive DDS are discussed.
Database :	ScienceDirect

Title :	Advanced Practice Nurses' Meaningful use of electronic health records
Author :	Marie-Rachelle Narcisse, Thomas A. Kippenbrock, Ellen Odell, Bill Buron
Journal :	Applied Nursing Research, In Press, Available online 15 April 2013, http://dx.doi.org/10.1016/j.apnr.2013.02.003
Abstract :	The aim of this study was to better understand electronic health records (EHRs) use among advanced practice nurses (APNs).
Database :	ScienceDirect

Title :	Synthesis and hypoglycemic activity evaluation of rhein amide derivatives
Author :	Xiaokang Zhu, Xiaoli Ye, Liu Song, Yonghuang Luo, Qing Tang, Yanan Jin, Xuegang Li
Journal :	Medicinal Chemistry Research, May 2013, Volume 22, Issue 5, pp 2228-2234
Abstract :	In order to investigate the relationship of the structure and hypoglycemic activity, rhein amide derivatives 2a–2e were synthesized and their hypoglycemic activities were evaluated by glucose consumption in HepG2. Their structures were characterized by 1H-, 13C NMR, IR, mass and elemental analysis. All the compounds exhibited strong hypoglycemic activity in improving glucose consumption in HepG2 cell assays in vitro, which was influenced by the diversity of rhein amide derivatives. The compounds 2a–c, 2f, and 2g bearing heterocyclic ring were proved to be more potentially useful in glucose consumption than dimethyldiguanide. Among all the compounds, compound 2f exhibited the strongest activity on glucose consumption, while compound 2d showed the weakest activity.
Database :	SpringerLink

Title :	Synthesis and antitumor studies of novel benzopyrano-1,2,3-selenadiazole and spiro[benzopyrano]-1,3,4-thiadiazoline derivatives
Author :	S. I. El-Desoky, F. A. Badria, M. A. Abozeid, E. A. Kandeel, A. H. Abdel-Rahman
Journal :	Medicinal Chemistry Research, May 2013, Volume 22, Issue 5, pp 2105-2114
Abstract :	A convenient and efficient synthetic protocol of new selenadiazole and thiadiazoline derivatives incorporating benzopyranone moiety from readily available starting materials was described. Reaction of different 2,2-dialkyl and 2,2-spirocycloalkyl dihydrobenzopyranones 1a–e with semicarbazide hydrochloride and thiosemicarbazide afforded the corresponding semicarbazones 2a–e and thiosemicarbazones 3a–e, respectively. Furthermore, cyclization of the semicarbazones 2a–e via oxidation using selenium dioxide gave a novel series of chromenoselenadiazoles 4a–e. A series of spirobenzopyrano-1,3,4-thiadidazolines 5a–e were synthesized by refluxing of the thiosemicarbazones 3a–e in acetic anhydride. The synthesized compounds were tested in vitro against four cancer cell lines namely: MCF-7, VERO, WI-38, and HEPG-2. In vivo studies were also performed using Ehrlich ascites carcinoma for antitumor activity. Interestingly, Compounds 4b and 5a showed significant antitumor activities and were capable to improve the hematological parameters as well as increase the mean survival time of the mice bearing tumor.
Database :	SpringerLink

Title :	TYPE 2 DIABETES: AN EPIDEMIC IN CHILDREN
Author :	Wilson, Valerie
Journal :	Nursing Children & Young People (NURS CHILD YOUNG PEOPLE), 2013 Mar; 25 (2): 14-7.
Abstract :	Increasing numbers of children and adolescents are developing type 2 diabetes. Symptoms of this condition include obesity, a sedentary lifestyle, insulin resistance and hypertension. Type 2 diabetes is more common in girls and families with a

	positive history of the disease. Diagnosis is often delayed and may identify the presence of chronic complications. An oral glucose tolerance test and a two-hour plasma glucose assessment are the best screening and diagnostic investigations. Treatment is based on weight reduction with diet and exercise, glycaemia monitoring and medication if necessary.
Database :	CINAHL Plus with Full Text.