

บทความที่น่าสนใจประจำเดือน มีนาคม 2559

สาขาวิทยาศาสตร์สุขภาพ

Title :	Laser Direct-Write onto Live Tissues: A Novel Model for Studying Cancer Cell Migration
Author :	Hope E. Burks, Theresa B. Phamduy, Mohammad S. Azimi, Jayant Saksena, Matthew E. Burow, Bridgette M. Collins-Burow, Douglas B. Chrisey and Walter L. Murfee
Journal :	Journal of Cellular Physiology: Accepted manuscript online on 29 FEB 2016 06:55AM EST DOI: 10.1002/jcp.25363
Abstract :	Investigation into the mechanisms driving cancer cell behavior and the subsequent development of novel targeted therapeutics requires comprehensive experimental models that mimic the complexity of the tumor microenvironment. Recently, our laboratories have combined a novel tissue culture model and laser direct-write, a form of bioprinting, to spatially position single or clustered cancer cells onto ex vivo microvascular networks containing blood vessels, lymphatic vessels, and interstitial cell populations. Herein, we highlight this new model as a tool for quantifying cancer cell motility and effects on angiogenesis and lymphangiogenesis in an intact network that matches the complexity of a real tissue. Application of our proposed methodology offers an innovative ex vivo tissue perspective for evaluating the effects of gene expression and targeted molecular therapies on cancer cell migration and invasion.
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Title :	Radiation-Induced RhoGDIβ Cleavage Leads to Perturbation of Cell Polarity: A Possible Link to Cancer Spreading
Author :	Mamoru Fujiwara, Mayumi Okamoto, Masato Hori, Hiroshi Suga, Hiroshi Jikihara, Yuka Sugihara, Fumio Shimamoto, Toshio Mori, Koichi Nakaoji, Kazuhiko Hamada, Takahide Ota, Ralf Wiedemuth, Achim Temme and Masaaki Tatsuka

Journal :	Journal of Cellular Physiology: Accepted manuscript online on 25 FEB 2016 02:31PM EST DOI: 10.1002/jcp.25362
Abstract :	<p>The equilibrium between proliferation and apoptosis is tightly balanced to maintain tissue homeostasis in normal tissues and even in tumors. Achieving and maintaining such a balance is important for cancer regrowth and spreading after cytotoxic treatments. Caspase-3 activation and tumor cell death following anticancer therapy as well as accompanying cell death pathways are well characterized, but their association to homeostasis of cancerous tissue and tumor progression remains poorly understood. Here we proposed a novel mechanism of cancer spreading induced by caspase-3. RhoGDIβ, known as a direct cleavage substrate of caspase-3, is overexpressed in many epithelial cancers. The N-terminal-truncated RhoGDIβ (ΔN-RhoGDIβ) is accumulated in caspase-3-activated cells. Stable expression of ΔN-RhoGDIβ in HeLa cells did not induce apoptosis, but impaired directional cell migration in a wound-healing assay accompanied by a perturbed direction of cell division at the wound edge. Subcellular protein fractionation experiments revealed that ΔN-RhoGDIβ but not wild-type RhoGDIβ was present in the detergent-soluble cytoplasmic and nuclear fractions and preferentially associated with Cdc42. Furthermore, Cdc42 activity was constitutively inhibited by stable expression of ΔN-RhoGDIβ, resulting in increased radiation-induced compensatory proliferation linking to RhoA activation. Thus, ΔN-RhoGDIβ dominant-negatively regulates Cdc42 activity and contributes to loss of polarity-related functions. The caspase-3-cleaved RhoGDIβ is a possible determinant to promote cancer spreading due to deregulation of directional organization of tumor cell population and inhibition of default equilibrium between proliferation and apoptosis after cytotoxic damage.</p>
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Title :	Attitudes towards anorexia nervosa: volitional stigma differences in a sample of pre-clinical medicine and psychology students
Author :	Amy Jean Bannatyne & Peta Berenice Stapleton
Journal :	Journal of Mental Health: Published online on 29 Feb 2016 DOI:10.3109/09638237.2016.1149801
Abstract :	<p>Background: Anorexia nervosa (AN) is a highly stigmatised condition, with treatment often involving multidisciplinary care. As such, understanding and comparing the attitudes of emerging mental health and medical professionals towards AN, within the content of sex-based differences, is pertinent to facilitate the development of targeted stigma interventions.</p> <p>Aims: Examine the volitional stigmatisation of AN in emerging medical and mental health professionals.</p> <p>Method: Participants (N = 126) were medical (n = 41) and psychology students (n = 85) who completed a range of attitudinal outcome measures (e.g. Causal Attributions Scale, Eating Disorder Stigma Scale, Opinions Scale, Characteristics Scale and Affective Reaction Scale).</p> <p>Results: Across both disciplines, men were found to exhibit significantly higher eating disorder (ED) stigma, considered AN to be a more trivial and weak illness, and attributed greater levels of blame and responsibility to AN sufferers. Men also had significantly lower biogenetic causal attributions. Compared with psychology students, medicine students exhibited slightly greater anticipation of negative reactions in response to AN, obtained higher selfish/vain scores and considered sociocultural factors to contribute “a lot” in the development and maintenance of AN.</p> <p>Conclusions: Overall, results indicate interventions aimed at improving ED mental health literacy are needed, specifically targeting males and potentially medical students.</p>
Database :	Taylor & Francis Online

Title :	Lactose-modified DNA tile nanostructures as drug carriers
Author :	Pinar Akkus Sut, Cansu Umran Tunc & Mustafa Culha
Journal :	Journal of Drug Targeting: Published online on 26 Feb 2016 DOI:10.3109/1061186X.2016.1144059
Abstract :	<p>Background: DNA hybridization allows the preparation of nanoscale DNA structures with desired shape and size. DNA structures using simple base pairing can be used for the delivery of drug molecules into the cells. Since DNA carries multiple negative charges, their cellular uptake efficiency is low. Thus, the modification of the DNA structures with molecules that may enhance the cellular internalization may be an option. Objective: The objective of this study is to construct DNA-based nanocarrier system and to investigate the cellular uptake of DNA tile with/without lactose modification. Methods: Doxorubicin was intercalated to DNA tile and cellular uptake of drug-loaded DNA-based carrier with/without lactose modification was investigated <i>in vitro</i>. HeLa, BT-474, and MDA-MB-231 cancer cells were used for cellular uptake studies and cytotoxicity assays. Using fluorescence spectroscopy, flow cytometry, and confocal microscopy, cellular uptake behavior of DNA tile was investigated. The cytotoxicity of DNA tile structures was determined with WST-1 assay. Results: The results show that modification with lactose effectively increases the intracellular uptake of doxorubicin loaded DNA tile structure by cancer cells compared with the unmodified DNA tile. Conclusion: The findings of this study suggest that DNA-based nanostructures modified with carbohydrates can be used as suitable multifunctional nanocarriers with simple chemical modifications.</p>
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Title :	Current clinical evidence for the use of mesenchymal stem cells in articular cartilage repair
Author :	Dimitris Reissis, Quen Oak Tang, Nina Catherine Cooper, Clare Francesc Carascoa, Zakareya Gamie, Athanasios Mantalaris & Eleftherios Tsiridis
Journal :	Expert Opinion on Biological Therapy: Published online on 20 Feb 2016 DOI:10.1517/14712598.2016.1145651

Abstract :	<p>Introduction: Articular cartilage is renowned for its poor intrinsic capacity for repair. Current treatments for osteoarthritis are limited in their ability to reliably restore the native articular cartilage structure and function. Mesenchymal stem cells (MSCs) present an attractive treatment option for articular cartilage repair, with a recent expansion of clinical trials investigating their use in patients.</p> <p>Areas covered: This paper provides a current overview of the clinical evidence on the use of MSCs in articular cartilage repair.</p> <p>Expert opinion: The article demonstrates robust clinical evidence that MSCs have significant potential for the regeneration of hyaline articular cartilage in patients. The majority of clinical trials to date have yielded significantly positive results with minimal adverse effects. However the clinical research is still in its infancy. The optimum MSC source, cell concentrations, implantation technique, scaffold, growth factors and rehabilitation protocol for clinical use are yet to be identified. A larger number of randomised control trials are required to objectively compare the clinical efficacy and long-term safety of the various techniques. As the clinical research continues to evolve and address these challenges, it is likely that MSCs may become integrated into routine clinical practice in the near future.</p>
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Title :	Differential diagnosis between primary lung squamous cell carcinoma and pulmonary metastasis of head and neck squamous cell carcinoma
Author :	Junji Ichinose, Aya Shinozaki-Ushiku, Daiya Takai, Masashi Fukayama & Jun Nakajima
Journal :	Expert Review of Anticancer Therapy: Published online on 16 Feb 2016 DOI:10.1586/14737140.2016.1147352
Abstract :	Differentiation between lung squamous cell carcinoma and pulmonary metastasis of head and neck squamous cell carcinoma is clinically important because the prognoses and therapeutic options are considerably different. However, the clinical, pathological, and immunohistochemical diagnostic methods have not yet been fully established. Although various molecular methods have been developed, they have not yet been practically applied. A combined approach involving molecular and immunohistochemical analysis, such as one that uses antibodies selected on the

	basis of comprehensive genetic analysis results, may be effective. We suggest a new diagnostic criteria using the clinical characteristics and the result of immunohistochemical analysis. However, there are two underlying problems in the development of new diagnostic methods: tumor heterogeneity and determination of the diagnostic accuracy.
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Title :	Does size matter? Examining the effect of obesity on inpatient amputation rehabilitation outcomes
Author :	Lilian L. Y. Vivas, Tim Pauley, Steven Dilkas & Michael Devlin
Journal :	Disability and Rehabilitation: Published online on 17 Feb 2016 DOI:10.3109/09638288.2016.1140831
Abstract :	<p>Purpose This study investigated whether obesity impacted clinical outcomes of patients at discharge from inpatient amputation rehabilitation. Method This was a retrospective chart review examining admissions for lower extremity amputation rehabilitation at a Canadian Regional Amputee Rehabilitation Programme between December 2011 and June 2014. Discharge outcomes were predefined as the two-minute walk test (2MWT), the L-test of functional mobility and the SIGAM score. These were compared between each body mass index (BMI) group (underweight < 18.4 kg/m², normal between 18.5 and 24.9 kg/m², overweight between 25.0 and 29.9 kg/m² and obese greater or equal to 30 kg/m²) as a whole and within transtibial, transfemoral and bilateral amputation groups. Results Of the 289 admissions meeting inclusion criteria, only underweight patients walked significantly less distance on the 2MWT than normal weight patients. There were group differences in the L-test, but <i>post hoc</i> testing was unable to qualify the differences. No significant difference was found in the SIGAM score. There were no significant differences found in the 2MWT, L-test or SIGAM when patients were grouped by amputation level. Conclusions Obesity does not appear to significantly impact inpatient amputation rehabilitation outcomes such as the 2MWT, L-test or SIGAM score. As such, obesity should not be a deciding factor as to whether a patient is offered rehabilitation.</p> <ul style="list-style-type: none"> • Implications for Rehabilitation

	<ul style="list-style-type: none"> • Obesity is increasing in prevalence and is comorbid with peripheral vascular disease and diabetes, the leading causes of lower extremity amputation. • Function is compromised in the obese general population when compared to non-obese individuals. • Obesity does not seem to confer a disadvantage with regards to validated outcomes, such as the 2-min walk test, L-test or SIGAM score at discharge after inpatient amputation rehabilitation. • Obesity should not be a barrier to offering inpatient rehabilitation to amputation patients.
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Title :	What do patients need to know? A study to assess patients' satisfaction with information about medicines
Author :	Michael J. Twigg, Debi Bhattacharya, Allan Clark, Rina Patel, Hannah Rogers, Hattie Whiteside, Mahavish Yaqoob and David J. Wright
Journal :	International Journal of Pharmacy Practice: Article first published online on 15 FEB 2016 DOI: 10.1111/ijpp.12252
Abstract :	<p>Objectives</p> <p>This study aimed to determine the information needs and reported adherence of patients prescribed medicines for chronic conditions in those who have received a community pharmacy advanced service and those who have not.</p> <p>Methods</p> <p>A questionnaire was constructed using validated tools to measure medication information satisfaction and adherence together with questions eliciting information regarding the use of pharmacy services and demographic characteristics. This questionnaire was distributed from four community pharmacies to a convenience sample of 400 patients as they collected their medicines. Patients were eligible if</p>

	<p>prescribed more than one regular medicine and attending the pharmacy for longer than 3 months. The questionnaire was returned directly to the university.</p> <p>Key Findings</p> <p>Two hundred and thirty-two (58%) questionnaires were returned. All respondents desired further information about their prescribed medicines, particularly about potential medication problems. Dissatisfaction centred on side effects, interactions and certain medicine characteristics such as how long it will take to act. Satisfaction with information about medicines and adherence were significantly greater in a subgroup reporting that they had received an advanced pharmacy service, e.g. medicine use review (MUR).</p> <p>Conclusion</p> <p>Patients who had received an advanced service reported greater adherence and satisfaction with medicine-related information. This was a small, observational study, using a convenience sample of four pharmacies; in order to draw definitive conclusions, a larger study with participants randomised to receive an advanced service is required.</p>
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Title :	Red ginseng and vitamin C increase immune cell activity and decrease lung inflammation induced by influenza A virus/H1N1 infection
Author :	Hyemin Kim, Mirim Jang, Yejin Kim, Jiyea Choi, Jane Jeon, Jihoon Kim, Young-il Hwang, Jae Seung Kang and Wang Jae Lee
Journal :	Journal of Pharmacy and Pharmacology: Article first published online on 21 FEB 2016 DOI: 10.1111/jphp.12529
Abstract :	<p>Objectives</p> <p>Because red ginseng and vitamin C have immunomodulatory function and anti-viral effect, we investigated whether red ginseng and vitamin C synergistically regulate immune cell function and suppress viral infection.</p> <p>Methods</p>

	<p>Red ginseng and vitamin C were treated to human peripheral blood mononuclear cells (PBMCs) or sarcoma-associated herpesvirus (KSHV)-infected BCBL-1, and administrated to Gulo(−/−) mice, which are incapable of synthesizing vitamin C, with or without influenza A virus/H1N1 infection.</p> <p>Key findings</p> <p>Red ginseng and vitamin C increased the expression of CD25 and CD69 of PBMCs and natural killer (NK) cells. Co-treatment of them decreased cell viability and lytic gene expression in BCBL-1. In Gulo(−/−) mice, red ginseng and vitamin C increased the expression of NKp46, a natural cytotoxic receptor of NK cells and interferon (IFN)-γ production. Influenza infection decreased the survival rate, and increased inflammation and viral plaque accumulation in the lungs of vitamin C-depleted Gulo(−/−) mice, which were remarkably reduced by red ginseng and vitamin C supplementation.</p> <p>Conclusions</p> <p>Administration of red ginseng and vitamin C enhanced the activation of immune cells like T and NK cells, and repressed the progress of viral lytic cycle. It also reduced lung inflammation caused by viral infection, which consequently increased the survival rate.</p>
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Title :	Serum Paraoxonase Activity and Malondialdehyde Serum Concentrations Remain Unaffected in Response to Hydroxyurea Therapy in β-Thalassemia Patients
Author :	Muhammad Zohaib, Saqib H. Ansari, Zehra Hashim, Tahir S. Shamsi and Shamshad Zarina
Journal :	The Journal of Clinical Pharmacology: Article first published online on 28 DEC 2015 DOI: 10.1002/jcph.675
Abstract :	-Thalassemia is the most common hereditary disorder characterized by reduced production of β -globin chains of hemoglobin A (HbA). In recent years, hydroxyurea (HU) has shown promising therapeutic benefits in patients with β -thalassemia by fetal hemoglobin augmentation. We have analyzed effects of hydroxyurea treatment on oxidative stress in β -thalassemia patients by assessing activities of paraoxonase

(PON) and arylesterase along with malondialdehyde (MDA) and total reactive oxygen species (ROS) concentrations. Blood samples from 159 individuals including 56 HU-treated and 58 untreated β -thalassemia patients and 45 healthy controls were analyzed. PON activity was found to be highest in healthy individuals (177.76 ± 4.44 U/mL) as compared to treated (52.67 ± 3.65 U/mL) and untreated (55.11 ± 3.26 U/mL) patients. A similar trend was observed in the case of arylesterase activity in normal, β -thalassemia-treated, and untreated (210.0 ± 11.25 U/mL, 163.03 ± 9.04 U/mL, 139.77 ± 10.10 U/mL) subjects. Serum MDA concentrations (2.59 ± 0.09 nmol/mL, 2.45 ± 0.08 nmol/mL, and 1.15 ± 0.05 nmol/mL) and total ROS concentrations (3.73 ± 0.20 nmol/mL, 3.54 ± 0.23 nmol/mL, and 2.45 ± 0.14 nmol/mL) were significantly elevated in both groups (untreated and treated) as compared to healthy individuals ($P < .01$). Oxidative stress was found to be markedly elevated in β -thalassemia patients as compared to healthy controls. Insignificant differences were, however, observed in mean concentrations of PON1 paraoxonase and arylesterase activities, serum MDA concentration and total ROS concentrations between HU-treated and untreated patients. We propose that HU therapy alone seems to be ineffective in managing oxidative stress and is likely to offer a better clinical outcome when supplemented with efficient iron chelation therapy and antioxidants.

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