ORAL PRESENTATIONS

(8:40 AM)
BARRIERS TO SUNSCREEN USAGE AMONGST YOUTH: A DESCRIPTIVE CROSS-SECTIONAL STUDY

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Background: Despite adequate understanding of the harmful effects of ultraviolet radiation sun protection remains low, particularly amongst youth. Objective: The primary aim of this study is to evaluate barriers to sunscreen usage amongst youth. Secondary objectives include characterizing sunscreen usage, determining attitudes towards sunscreen, and assessing other parameters related to sun protection. Method: In 2016, 1014 youths were surveyed. Approximately 92.2% of participants responded. Questions were assessed to determine acceptability of sunscreen use, application practices, attitudes towards sunscreen, and other parameters related to sun protection. Results: Engagement in sun protective behaviors was low across all parameters. Most participants indicated that they do not like to wear sunscreen (73%, n= 731). Major reasons for not using sunscreen were annoyance of application (79%, n=588) and an unpleasant feeling on the skin (70%, n=519). Less than half of participants wore sunscreen as recommended by American Academy of Dermatology (AAD) guidelines. Limitations: Results are based on self-reported data. Conclusions: Knowledge of these behaviors is important for targeted prevention campaigns.

Category: Applied/functional experiments

(8:52 AM)
TEXTING IN CLINICAL PRACTICE

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Background: The use of telecommunication in healthcare is rapidly evolving and has been transformed by the ubiquitous use of personal communication devices, specifically cell phones. However, unencrypted use of such practices can raise concerns about confidentiality and security, thus uptake and legislation of this promising field often encounters resistance. Our aim is to identify the prevalence and pattern of teledermatology use by medical trainees, as identifying its existing level of use is the first crucial step in creating a sustainable teledermatology practice.

Methods: A province wide survey was sent to medical students, residents, and fellows of different specialties to assess their use of cellphones in clinical practice.

Results: The survey yielded 419 responses from 23 specialties. 98% of respondents report using texting for clinical practice with 76% of them using it at least once per day. 38.5% of those who use texting also report sending clinical images. While 61.1% store clinical images on their phones, only 49% delete them at least on a weekly basis. Less than 13% of respondents have encrypted cell phones.

Conclusions: Cell phone use in clinical practice is undoubtedly prevalent and likely inevitable due to its convenience and acceleration of patient care. However, as technology often advances faster than regulatory or remuneration policies, the use of telehealth is frequently on an unofficial and unregulated basis. Our results suggest that there is a strong demand by physicians and physicians in training for incorporation of mobile devices into standard healthcare practice.

Category: Applied/functional experiments

(9:04 AM)

A CONTENT-BASED IMAGE RETRIEVAL APPROACH TO ASSISTING DECISION SUPPORT IN DERMOSCOPY IMAGES

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Providing physicians with a set of pathology-confirmed similar images to a new difficult case can efficiently assist them towards a more confident diagnosis; this concept is called Content-Based Image Retrieval (CBIR). Displaying similar images provides physicians with a diagnostic support environment rather than a crisp second decision that is usually produced by machine learning techniques, and can assist physicians in the diagnosis of cancerous pigmented lesions as well as being a powerful instructive tool for inexperienced physicians.

We developed a dermoscopy CBIR system using a method based on Speeded-Up Robust Features (SURF) interest point detection. SURF automatically finds points of interest with the shape of blobs, dots and other regions containing texture information. Texture features and local color histograms are locally extracted from each detected key point. The similarity of two images is decided by matching their key points and finding the Euclidean distance between them. The average distance of all matches between two images is taken as the distance between them. Therefore, for a query image we can sort the images in the database based on their distance to the query image.

We evaluated our CBIR system's performance using query images from a labelled dermoscopy atlas, with 380/1011 images containing a typical pigment network (PN). We defined precision as the percentage of images retrieved which match a dermoscopic feature of the query image. For query images containing a PN the precision is 75%; and for images not containing a PN the precision is 81%, which is acceptable for such systems.

Category: (3) Applied/functional experiments

(9:16 AM)

SKIN SURFACE ROUGHNESS OBTAINED FROM LASER SPECKLE IMAGING AS A DIAGNOSTIC TOOL

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Skin surface roughness is an important property for differentiating skin diseases. Recently, roughness has also been identified as a potential diagnostic indicator in the early detection of skin cancer. Objective quantification is usually carried out by creating silicone replicas of the skin and then measuring the replicas. We have developed an alternative in-vivo technique to measure skin roughness based on laser speckle. Laser speckle is the interference pattern produced when coherent light is used to illuminate a rough surface and the backscattered light is imaged. Acquiring speckle contrasts from skin phantoms with controllable roughness, we derived an improved calibration curve by linearly interpolating between measured points. This calibration curve accounts for internal scattering and is designed to evaluate skin microrelief whose root-mean-square roughness is in the range of 10-60 micrometers. To validate the effectiveness of our technique, we conducted a study to measure 243 skin lesions including actinic keratosis (8), basal cell carcinoma (24), malignant melanoma (31), nevus (73), squamous cell carcinoma (19), and seborrheic keratosis (79). The average roughness values ranged from 26 to 57 micrometers. Malignant melanoma was ranked as the smoothest and squamous cell carcinoma as the roughest lesion. An ANOVA test confirmed that malignant melanoma has significantly higher roughness than other lesion types. Our results suggest that skin microrelief associated with fine skin roughness can be used to detect malignant melanoma from other skin conditions and has potential as a non-invasive modality in the detection of skin cancer.

Category: Pilot/exploratory experiments

(9:28 AM)

EXPLORATION OF ITK INHIBITORS AS THERAPIES FOR CUTANEOUS T-CELL LYMPHOMA

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Background: Cutaneous T-cell lymphoma (CTCL) is characterized by accumulation of malignant T cells in the skin. These cells undergo increased proliferation and decreased apoptosis compared with benign CD4 T cells, and show immunological aberrancies, such as decreased TH1 and increased TH2 cytokine profiles. There are no satisfactory therapies at present. Recently, we revealed that CTCL cells contained aberrantly up-regulated interleukin-2-indicible T-cell kinase (ITK), a key molecule controlling growth and immune-regulating function of T cells.

Objective: To evaluate the therapeutic potential of ITK inhibition for CTCL.

Materials and Methods: We quantified ITK expression in skin biopsies and cultured CTCL cells (Hut78 and SZ4) cells by RT-PCR and Western Blotting. ITK suppression was achieved using lentivirus-mediated shRNA approach. Chemical inhibition of ITK function was achieved using commercially available kinase inhibitor. The impact of ITK silencing and chemical inhibition was measured in both *in vitro* and *in vivo* models.

Results: CTCL skin biopsies and purified CTCL cells contained 5-fold more expression of ITK compared with benign controls. Silencing of ITK expression led to dramatic reduction of proliferation and increased apoptosis of CTCL cells, both in cell culture and in CTCL mouse model. Further, treatment of CTCL cells with a small molecule inhibitor of ITK resulted in efficient killing of CTCL cells.

Conclusion: ITK inhibition is a promising approach to develop therapies for CTCL.

Clinical Implications: This study provides a strong rationale for a clinical trial using ITK inhibitors as CTCL treatment.

Category: Early experiments with well defined objectives/hypotheses

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(9:40 AM)
THREE-DIMENSIONAL MODELLING OF SKIN LESIONS BY STEREOPHOTOGRAMMETRY

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Stereophotogrammetry is the creation of computer generated three-dimensional models using multiple ordinary photographs. This project is on the use of stereophotogrammetry to model skin lesions. Stereophotogrammetry provides clearer depictions of lesion elevation and induration compared to standard two-dimensional photographs. In a pilot study evaluating the stereophotogrammetry technique, we compared preliminary three-dimensional models from skin phantoms and in-vivo lesions. These models were created with photographs taken using a Nikon D750 DSLR camera equipped with a macro lens. The number of initial photographs per model ranged from 20 to 50, and the feature density of the photographs varied per model. Skin phantom replicas of individual basal cell carcinoma, squamous cell carcinoma, and seborrheic keratosis lesions were modelled with a high amount of detail. Attempts to model a larger section of the skin phantom with multiple lesions, and attempts to model in-vivo seborrheic keratosis, produced lower resolution models. The primary limiting factor for modelling multiple lesions was the

lower feature density in each photograph. Modelling of in-vivo lesions was limited by the time and positioning required to take many photographs at varying angles of a single lesion. The resolution of the models strongly depends on using a high number of photographs and obtaining a high feature density. In conclusion, we have successfully created three-dimensional models from skin lesion phantoms and in-vivo lesions. Future research direction is to improve image resolution for large-area and in-vivo models.

Category: Pilot/Exploratory Experiments

(11:30 AM)

PRIOR SUN EXPOSURE AND SKIN-SPECIFIC AUTO-ANTIBODIES ARE ASSOCIATED WITH SKIN DISEASE IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Almost 80% of systemic lupus erythematosus (SLE) patients manifest lupus-specific skin lesions. A pathogenic link between skin inflammation and SLE has been proposed. We hypothesized that skin-directed antibodies are present in SLE and are associated with a history of significant sun exposure. Blood was collected from three patient populations; SLE with a history of lupus-specific skin lesions as cases (n=17), SLE without a history of skin lesions (n=8) and atopic dermatitis (n=17) as controls. Serum antidesmoglein-3 antibodies were measured by ELISA. Peripheral blood mononuclear cells were analyzed by flow cytometry. Patients completed a scored questionnaire addressing sun exposure history prior to disease onset. The questionnaire, flow cytometry and ELISA results were analyzed using Mann-Whitney test. Questionnaire responses indicate increased sun exposure prior to disease onset in SLE patients with skin disease when compared to SLE patients without skin disease (median score=60 versus 34.5, respectively; $p<0.05$). Anti-desmoglein-3 auto-antibody levels were higher in the serum of SLE patients with skin disease than in patients without skin disease (median=0.571 versus 0.123 IU, respectively; $p<0.05$). T-follicular helper (TFH) cells stimulate B-cells to produce auto-antibodies via IL-21. There was a trend to enhanced IL-21 production in SLE with skin lesions compared to SLE without skin (median=34 versus 19 %). SLE patients with skin disease have a history of higher antecedent sun exposure consistent with the hypothesis that sun exposure is an environmental trigger. The resulting immune activation of the skin may be reflected in aberrant skin-specific antibody production and heightened IL-21 secretion by TFH cells.

Category: Early experiments with well-defined objectives/hypotheses

(11:42 AM)

OLD IS GOLD – REVISITING THE EFFICACY AND LOCAL TOXICITY OF TOPICAL PSORALEN-ULTRAVIOLET A PHOTOTHERAPY FOR PALMOPLANTAR DERMATOSES

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Palmoplantar involvement of dermatoses such as atopic dermatitis and psoriasis has a significant negative impact on quality of life. Topical psoralen-ultraviolet A (tPUVA) phototherapy remains an important option when topical treatments have failed and potential adverse events outweigh the benefits of systemic therapies. Literature on tPUVA efficacy and toxicity is sparse. Our objectives were to assess the efficacy and toxicity of twice weekly tPUVA after an initial treatment course and to identify associated clinical factors. This pilot study retrospectively audited 180 charts of patients referred for tPUVA of palmoplantar dermatoses. One hundred and twenty-six patients started tPUVA and 110 patients completed the initial treatment course. Of the latter, 37 patients (33.6%) had complete/near complete clearance of lesions. Sixty-one patients (55.5%) had more than 50% improvement. Of all patients who started tPUVA (n=126), one or more adverse reactions occurred in 50 patients (39.7%). Only four patients (3.6%) stopped therapy due to adverse reactions. Binary multivariate logistic regression analysis revealed that reaching high individual treatment UVA doses (p<0.001) and absence of adverse reactions (p=0.012) were associated with favourable outcomes. Statistical analysis did not reveal any significant associations with local adverse reactions. In conclusion, tPUVA is effective and well tolerated during treatment of palmoplantar dermatoses unresponsive to topical treatments alone. Increasing the power of this study by including an additional 1,320 available cases may reveal the importance of factors closely related to high UVA doses and thereby improve identification of patients likely to have favourable outcomes or local toxicity.

Category: Pilot/exploratory experiment

(11:54 AM)

NON-INVASIVE SKIN CANCER DIAGNOSIS BY RAMAN SPECTROSCOPY: AN UPDATE

Jianhua Zhao,[1,2] Haishan Zeng,[1,2] David I. McLean,[1] Sunil Kalia[1] and Harvey Lui[1,2]

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Background: Raman spectroscopy is a non-invasive optical technique that provides finger-print information on molecules within biological tissue. We developed a real-time Raman system for clinical skin cancer diagnosis that provides analysis results in less than 2 seconds. Previous large-scale clinical study established that real-time Raman spectroscopy can distinguish malignant from benign skin lesions. The objective of this presentation is to provide an update of this technology for skin cancer diagnosis, particularly the results of the newly proposed wavenumber selection algorithm. *Methods:* An integrated real-time Raman spectroscopic system was used to acquire skin Raman spectrum. The spectra were divided into training (n=518) and test set (n = 127). Wavenumber selection was implemented using windows of wavenumbers and leave-one-out cross-validated stepwise regression. Multi-variant statistical analysis was used for lesion classification based on selected wavenumbers. *Results:* Diagnostic performance was improved for the training set, the test set and the combined dataset after wavenumber selection. The area under the receiver operating characteristic curve (ROC AUC) was improved from 0.879 (95%CI: 0.829-0.929) to 0.905 (95%CI: 0.879-0.931), from 0.861 (95%CI; 0.796-0.927) to 0.891 (95%CI: 0.835-0.948), and from 0.891 (95%CI: 0.867-0.916) to 0.906 (95%CI: 0.883-0.929) for the training, the test and the combined set, respectively. The overall diagnostic specificity was improved from 0.17–0.65 to 0.20–0.75 at sensitivity levels of 0.99–0.90. *Conclusions:* Real-time Raman spectroscopy can distinguish malignant from benign skin lesions with good diagnostic accuracy. It has great potential to aid skin cancer diagnosis in a clinical setting.

Category: Applied/functional experiments (animal models of disease and in vivo studies, etc)

(12:06 PM)

QUANTIFICATION OF ERYTHEMA ASSOCIATED WITH CONTINUOUS VERSUS INTERRUPTED SUTURES IN FACIAL SURGERY REPAIR: A RANDOMIZED PROSPECTIVE STUDY

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Continuous and interrupted suturing are among the most common techniques used in the closure of facial incisions in patients who have undergone Moh's micrographic surgery (MMS). Patients are often concerned about the cosmetic appearance of scars post-surgery, including residual erythema. However, few studies have investigated the cosmetic outcomes of continuous versus interrupted sutures. This randomized prospective split-scar study is designed to establish whether continuous or interrupted sutures cause the greatest degree of erythema in the surgical scars resulting from MMS, and to further elucidate the evolution of erythema over time for each technique. One hundred and five subjects participating in this study were recruited at the VGH Skin Care Centre. After subjects had undergone MMS, they were randomized into two groups. Depending on randomization, either the superior/medial or inferior/lateral half of the scar were sutured with continuous stitches, whereas the other half was closed with interrupted stitches.

Post-operatively, subjects were assessed at 1 week, 8 weeks, and 6 months and close-up photographs were taken under comparable lighting and photography parameters. In all interval photographs, our computerized algorithm was used to quantify intensity and surface area of erythema in each half of the scars. Comparative paired t-tests are under way on these quantified values at all three time intervals for interrupted and continuous sutures to better understand which suture type elicits the greatest erythema, and which type is most conducive to rapid regression of erythema. Our results may guide the use of suturing technique on the face in the future.

Category: Early experiments with well-defined objectives/hypotheses

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(12:18 PM)
DERMOSCOPY GUIDED MULTIMODALITY VIDEO MICROSCOPY OF HUMAN SKIN *IN VIVO* IN BOTH VERTICAL AND HORIZONTAL PLANE

Zhenguo Wu[1, 2], Yunxian Tian[1, 2], Jianhua Zhao[1, 2], Harvey Lui[1, 2], David I. McLean[1], Haishan Zeng [1, 2].

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Reflectance confocal microscopy (RCM) and multiphoton microscopy (MPM) are novel "optical biopsy" methods that provide noninvasive images of the skin *in vivo*. In contrast to conventional histopathologic evaluation of the skin, in which vertically-oriented sections show the interrelationships of microscopic features according to their depth within the skin, current RCM and MPM instruments are configured for two-dimensional imaging in a horizontal plane parallel to the skin surface. Both RCM and MPM are also limited to smaller fields of view such that it is hard to correlate the microscopic results with macro clinical presentation. To enable vertical section imaging and facilitate macro-micro correlation, we developed a dermoscopy guided multimodality video microscope with fast imaging capability in both the horizontal and vertical planes. RCM and MPM images are also obtained simultaneously and co-registered thereby providing complementary morphological information. The low resolution vertical section image shows skin structures according to depth while the high resolution horizontal section image shows cellular morphology at a selected depth. The system can stitch images to overcome the limitation of small field of view by continuously acquire images in a progressive scanning mode along either the x- or y-direction. A dermoscope is integrated to acquire macro images of skin as a guiding map to mark and correlate the location of the microscopic images. In conclusion, our system provides a means of interrogating human skin noninvasively in the vertical and horizontal planes with micro- and macro-scale image correlation.

Category: Applied/functional experiments

(12:30 PM)
CITRULLINATED PROTEINS IN ALOPECIA AREATA

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2 Centre for Brain Health, Department of Psychology, University of British Columbia.

Background: Alopecia areata (AA) is an autoimmune disease lacking a well-defined pathogenesis. Aberrant citrullination of proteins in autoimmune diseases, such as rheumatoid arthritis (RA), type 1 diabetes (T1D), and multiple sclerosis (MS) have revealed functional consequences associated with the disease. Previous studies have indicated abnormal citrullination of proteins associated with the joint increased autoreactivity of T and B cells in RA patients. **Objective:** To explore the pathogenesis of AA, we examined the citrullination of proteins in a mouse model of AA. **Methods:** Protein citrullination was detected by immunofluorescence staining (IS), western blot (WB) of skin sections, and isolated skin cells. Potential citrullinated target protein was identified by double immunostaining and WB. The autoantibodies in serum of AA mice was examined by WB. **Results:** immunostaining revealed greater citrullination around the anagen phase of hair follicles in AA skin when compared to normal C3H/HeJ mouse skin. WB showed a potential citrullinated protein at 50 kDa. Considering the distribution of citrullinated proteins in skin, trichohyalin may be a potential citrullinated protein. Indeed, immunostaining revealed a strong overlap between citrulline and trichohyalin antibodies in skin section and isolated skin cells. Consistent with WB results for citrulline, a 50 kDa citrullinated protein was also detected by trichohaylin antibody. Further we found that serum from AA, but not from normal mice, had autoantibody against a 50 kDa protein antigen. This study provides a first glance at citrullinated proteins in AA, and aids in understanding its underlying mechanisms, potentially leading to targeted treatment.

Category: Early experiments with a well-defined hypothesis.

(1:30 PM)
SKIN CONDITIONS ARE AMONGST THE MOST COMMON TYPE OF FAMILY PHYSICIAN VISITS

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2. Photomedicine Institute, Vancouver Coastal Health Research Institute

Background: Family physician office visits encompass a variety of medical conditions. There is limited published data for the composition of these medical office visits. We hypothesize that skin conditions rank amongst the most common type of diagnosis presenting to general practice physicians. In this study, our objective is to analyze and characterize frequent medical conditions presenting to general practitioners. **Methods:** We analyzed the British Columbia Medical Services Plan 2013 data that captured universal data on type of patient visits seen by general practitioners. The population in British Columbia was over 4.5 million in 2013, and there were

13 439 676 patient visits to general practitioners. Visits classified as general symptoms were excluded. Medical conditions were grouped according to their ICD-9 codes. Skin conditions were those primarily with cutaneous manifestations. **Results:** Skin conditions accounted for 1 of every 7 family physician office visits. For medical conditions classified as symptoms, general symptoms involving the skin and integumentary system were the most common type of presentation. Skin-related neoplasms were more common than any other neoplasm, including breast and prostate neoplasms. Common skin conditions presenting to the family doctor included eczematous dermatitis, acne and disorders of the sebaceous glands, cellulitis and infections of the skin, and skin neoplasms. **Conclusion:** Skin conditions account for a significant portion of visits to family physician offices. These findings suggest that an important understanding of these conditions is fundamental for family doctors.

Category: Exploratory experiments

(1:42 PM)

LONGITUDINAL, SERIAL NON-INVASIVE *IN VIVO* MONITORING OF HUMAN SKIN BY REFLECTANCE CONFOCAL AND MULTIPHOTON IMAGING

Giselle (Yunxian) Tian[1,2], Harvey Lui[1,2], Jianhua Zhao[1,2], Zhenguo Wu[1,2], Sunil Kalia[1], Vincent Richer[1], David I. McLean[1], Haishan Zeng[1,2]

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Non-invasive microscopy skin imaging has emerged as a powerful tool for skin biology and photobiology study. Reflectance confocal microscopy (RCM) and multiphoton microscopy (MPM) have achieved single-cell resolution for *in vivo* skin imaging. However, to repeatedly access the same skin microscopic location at different time points remains a great challenge. Thus, most current studies on skin cellular dynamics based on RCM and MPM lack comparison in the precise localization over time, especially for the completely normal skin. Here, we introduce a practical approach to localize a 0.2 mm×0.2mm area of normal human skin and trace back to the exact same location over a one-week period. This approach enabled (i) longitudinal, non-invasive label free cellular level imaging (RCM and MPM) of human skin *in vivo*; (ii) repetitive access to the same keratinocytes and melanocytes over time; (iii) real-time tracking depth resolved images of epidermis in stratum corneum, stratum granulosum, stratum spinosum and stratum basale layers and dermis *in vivo*. To allow longitudinal *in vivo* imaging, a washable temporary tattoo was used as a landmark so that the 0.2mm×0.2mm region of interest could be identified with the assistant of conventional white light microscopy and motorized translational stage. Our results thus established the basis for non-invasive, *in vivo* investigation of human normal skin, which could be combined with local interventions, such as UV exposure for evaluating the cell morphology and dynamics.

Category: Early experiments with well defined objectives/hypotheses

(1:54 PM)
HEMATOPOIETIC CELL-DERIVED MULTIPOTENT STEM CELLS IN TISSUE REPAIR: IMPLICATIONS FOR CHRONIC SKIN WOUND HEALING

Yunyuan Li, Reza B. Jalili, Aziz Ghahary, PhD

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Non-healing and chronic wounds cause tremendous suffering and debilitation. To look for new strategies to improve healing, for last few years, we have conducted a serial of studies to identify healing promoting factors. Our recent studies have found that one subset of blood cells can be dedifferentiated into multipotent stem cells induced by M-CSF. As blood cell infiltration and skin cells can produce this factor during the wound healing, these data suggest this factor may be a healing promoting factor through generating stem cells in the wound site. Indeed, in a skin excisional wound healing mouse model, we found that SSEA-1 and -3 positive stem cells are presence in wounded skin but not in the normal skin. After isolating cells from either normal or wounded skin by collagenase digestion, and analyzing the SSEA-1 positive cells by flow cytometry, we found there are a significant increase number of SSEA-1 positive cells in wounded skin compared to that in normal skin. Topical application of M-CSF in skin wounds remarkably accelerates healing while application of its neutralizing antibody significantly slows wound healing. Furthermore, injection of EGFP-labeled hematopoietic cell-derived stem cells generated from splenocytes can be enriched in the wound site of skin and further differentiated into functional organ specific cells. These data confirm that blood cell-derived SSEA positive stem cells are presence in the wound site after skin injury and the regulation of SSEA positive stem cells *via* application of M-CSF or its antibody can modulate skin wound healing.

(2:06 PM)
PROFILE OF ACTINIC KERATOSIS PATIENTS AND TREATMENTS ADMINISTERED

Sunil Kalia[1,2], Habibur Rahman[1], Paul Min[1], Jeffrey Yim[1], Harvey Lui[1,2], Brian Kunimoto[1], Gabriele Weichert[1], Kristin Noiles[1], Christina Han[1]

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2. Photomedicine Institute, Vancouver Coastal Health Research Institute

Background/objectives: Actinic keratosis (AK) is a precursor lesion to the development of skin cancer. Furthermore, it is amongst one of the common types of skin conditions presenting to dermatologists. However, there is a paucity of the demographic distribution of patients with AK presenting to dermatologists and the treatments administered. Therefore, the objective of our study is to characterize the demographic distribution with AK and what treatments were given to these patients that seek medical care with dermatologists. **Methods:** Dermatologist offices across British Columbia were selected to represent the number of dermatologists practicing within different metropolitan regions. In total, over 1450 patients with AK were studied. Demographic factors including age and gender were collected. Also, the site of involvement were recorded and

categorized as: i) scalp, face and neck, ii) trunk, iii) upper extremities, iv) and lower extremities. Treatments for each patient were also abstracted. **Results:** The age range of patients was between 26-101 years old, with the majority of patients being between 60-75 years old. Approximately, 56% of patients were males, and 44% of patients were females. The most common sites of involvement was the face, head and neck. Over 80% of patients were treated with cryotherapy, and the most common topical therapy prescribed was topical 5-fluorouracil therapy. The type of therapy didn't correspond to the age or sex of the patient, but was related to the site of involvement. **Conclusion:** These results help to fill in the paucity of data for AK patients presenting to the dermatologist.

(2:18 PM)
THE ROLE OF GRANZYME B IN EPIDERMOLYSIS BULLOSA

Christopher Turner[1], Hongyan Zhao[1], Zlatko Kopecki[2], Allison Cowin[2], David Granville[1]

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Epidermolysis Bullosa (EB) is a skin blistering disorder characterized by skin fragility and chronic blistering. EB is caused by structural defects in the basement membrane zone which disrupts adhesion between the epidermis and dermis. While much is known about the pathology of EB, there are still no effective treatments for this distressing disease.

Granzyme B (GzmB) is a serine protease that contributes to impaired cutaneous wound healing and scarring. GzmB accumulates in the extracellular milieu and contributes to the aberrant cleavage of key extracellular matrix (ECM) proteins required for normal tissue repair and remodeling. It was hypothesized that GzmB is increased in the skin and blisters of EB patients, and this contributes to impaired wound healing and scarring.

The source of GzmB was defined in a murine model of EB acquisita (EBA), an acquired disease classified by tissue-bound autoantibodies against Collagen VII anchoring fibrils. Here, wild-type mice were administered a Collagen VII antibody for 8 consecutive days to induce the EBA phenotype. Blister coverage on the dorsum reached 15% by day 12 post-treatment, and histology showed the bullous lesions to have clear epidermal–dermal separation. GzmB was significantly elevated in the dermis of the blistered skin compared to non-blistered controls. The GzmB substrates, decorin and laminin (key components of the ECM), were significantly decreased in blistered skin compared to controls. Together, GzmB expression is upregulated and may contribute to ECM damage associated with EB. Inhibition of GzmB may provide a therapeutic option for individuals afflicted by this debilitating disorder.

Category: Applied/functional experiments (animal models of disease and in vivo studies, etc)

(2:30 PM)

WHAT IS THE WORLD OF DERMATOLOGY TALKING ABOUT? TEXT ANALYSIS OF ABSTRACTS FROM THE 23rd WORLD CONGRESS OF DERMATOLOGY

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Background: The spectrum of abstracts submitted from across the globe and presented at the quadrennial World Congress of Dermatology (WCD) provides insights into disease priorities, research developments, and therapeutic trends according to different world regions.
Objective: To identify and compare prevailing diseases and trends in therapeutics from world regions by text-based abstract analysis.
Methods: Abstract bodies of all invited as well as proffered and accepted oral and poster presentations was categorized according to five geographic regions [Asia Pacific (Asia-Pac); Europe (Eur); Latin America (Lat-Amer); South Asia, Middle East, and Africa (SAsia-MEast-Africa); and USA and Canada (US-Can)] based on the location of the submitting author. Abstracts from each region were analyzed for word frequency, and the top 10 most frequent words denoting either a diagnosis or treatment in each region were tabulated.
Results: A total of 4,505 abstracts containing 1,055,641 words were analyzed from 104 countries. The most frequent disease entities across all 5 regions were psoriasis, acne, and dermatitis. Melanoma ranked in the top 10 in all regions except SAsia-MEast-Afr. Words related to infectious diseases were absent from the top 10 lists in Europe and the US-Can. For therapeutics, 'topical', 'corticosteroid', and words related to light-based modalities appeared most frequently in all 5 regions. Biologics were most prevalent in the US-Can, representing 4 of the top 10 list. Conclusions: There are regional similarities and differences in dermatologic disease entities and therapeutic trends of interest. Textual analysis can assist in quantifying the relative priorities ascribed by dermatologists to topics of interest.

Category: Pilot/exploratory experiments