The PASPCR Newsletter is published three times a year and is intended to serve as a regular means of communication for the members of our Society. The PASPCR Newsletter is distributed via e-mail, in pdf format, on the first of April, August and December and it will continue to be posted on the web site of the Society.

We hope you had a great time at the PASPCR Meeting, held on Vancouver, Canada and organized by Dr. Youwen Zhou. The meeting report of the 16th Annual Meeting of PanAmerican Society for Pigment Cell Research is published in this issue and will also be available on the PASPCR website (go to http://www.paspcr.org and click on the “PASPCR Information Page” tab).

Preparations for the 21st IPCC, spear-headed by Alain Taïeb are progressing well. The meeting will be held in Bordeaux, France on September 21 - 24, 2011. Further information on the meeting can be found on pages 26-32 of this newsletter.

In this issue, we continue the “Let me introduce…” section, which focuses on the activities of the National Institutes of Health Pigment Interest Group. We also continue the “Industry Perspectives” section with a column by Dr. Gopinathan Menon.

We hope you enjoy this issue. We encourage you to send us your comments at our email address paspcr.newsletters@gmail.com. Let us know what you would like to see in the letters, suggest sections you think would be useful to include, and recommend any changes that you would like to see.

We also encourage you to let us know about meetings that you think would be of interest to members of the Society. If you attend a scientific meeting at which you heard about work which you think will be of interest to the membership of the PASPCR, please write a few paragraphs summarizing what was presented and share it with us. Also, keep us updated on any “Members in the News” so we can spread the word of your successes.

This is your Newsletter, and we depend upon you to help us ensure it best serves the Society’s needs. We look forward to hearing your ideas and suggestions and to continue working together to compile the Newsletters for our Society.

The PASPCR Newsletter Editorial Team would like to thank to all our contributors for their columns submitted to us for inclusion in the letters.

We wish you Happy Holidays and a great 2011!

PASPCR Newsletter Editorial Team

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The PASCR Web Site can be found at: http://www.paspcr.org
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The PASPCR Newsletter is published three times a year (April, August and December) by the PanAmerican Society for Pigment Cell Research. All views are those of the authors. For further information or to submit articles, please use the e-mail address paspcr.newsletters@gmail.com.

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CALENDAR OF EVENTS

2010
The 50th Annual Meeting of American Society for Cell Biology
Date and place: December 11-15, Atlanta, GA, USA
Web-site: http://www.ascb.org

2011
21st IPCC
Date and place: September 21-24, Bordeaux, FRANCE
E-mail: contact@ipcc2011.org
Web-site: http://ipcc2011.org/accueil

- // -
The PASPCR would like to acknowledge and thank our Government and Corporate Sponsors. The list below reflects contributions made during the year of 2010. In the past, financial gifts from our Sponsors have allowed our Society to increase benefits to the membership far out of proportion to the actual dues collected from members. We gratefully acknowledge the contributions for the 16th PASPCR 2010 Annual Meeting as follows:

Canadian Institutes of Health Research (CIHR)

National Institutes of Health (NIH)

Vancouver General Hospital Photomedicine Institute

Johnson & Johnson Consumer Companies

Schering-Plough & Merck

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MEMBERSHIP UPDATES

by Dr. Andrzej Slominski

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PASPCR PRESIDENT’S CORNER

Receiving my Medicare Card two months ago was a shock: I thought I was still 21! As one ages, life seems to both compress and happen so fast. It seems like yesterday that it was 1978 and that the late Mac Hadley and Joe Bagnara were dragging me into the pigment cell field. I am glad they did. For over 30 years my major clinical and laboratory investigational efforts have been focused on melanoma. An early interest in retinoids also led to a parallel research effort in clinical chemoprevention and involvement with colorectal, prostate, and head and neck cancers. In 1995 a sentinel sabbatical with Helmut Sies in Dusseldorf, Germany led to a redirection of my work to reactive oxygen species and transcriptional regulation. Ironically my two quite separate lines of research never came together - until the last 3-4 years - and our major efforts now are oriented to developing a deep understanding of ROS and NO and their effect on downstream transcriptional and other factors as targets for therapeutic prevention (chemoprevention) or risk reduction, a term preferred by general mainstream medicine (think statins and antihypertensives for prevention of cardiovascular diseases).

I was surprised to be nominated for President-elect and delighted when I was actually elected. It has been a rewarding and fun three years as President and I have had the opportunity to get to know many of the members better! I do have three major concerns for the future though. Premammalian pigment cell biology, which was prominent in our society until the late eighties, seems to have almost entirely disappeared from our membership. Lots of interesting science is going on in that arena, and we should try to induce these investigators back. Also, in other parts of the world the properties of melanin continue to be studied in detail, a fact I was reminded of when I attended the recent ESPCCR in Cambridge; several talks on this fascinating molecule and a workshop to boot led by the Naples group. Melanin is found in many places in the body (the “anatomic/physiological basis for acupuncture) and I will predict that it will be the
molecule of the century - once we find out more about its fundamental properties. Of most concern though is the nearly complete separation of the larger clinical melanoma group from PASPCR. I think that I may be the last of the clinical oncologists remaining. We need to do what we can to continue to build bridges to the Society for Melanoma Research and for that matter to other societies that impact the melanocyte – e.g., The Society for Photobiology and various societies concerned with Vitiligo and as well for Genetics. Not an easy task, but one that needs to be pursued more vigorously in the future. PASPCR has always hovered around 100 members and although a very committed and vigorous group a few more pigmentos would assure long term viability.

One of the really great things about becoming a member of the pigment cell community was being involved as a Founding member (1978) of the International Pigment Cell Society and then participating in the formation of the International Federation of Pigment Cell Societies (1992), a momentous long night-time meeting in Venice in 1992: PASPCR, EPCR and JSPCR joining peacefully! And with the recent addition of the ASPCR expansion into new parts of the world. For me the spin-off from these scientific activities was, of course, the opportunity to make new friends and colleagues throughout the world and to visit fascinating places and cultures.

This year there were 7 nominations for President-elect and 16 for Council Membership! The nominating Committee winnowed this down to two and seven respectively for the Election, the results of which are below. PASPCR is in good hands! I thank the outgoing council members, Marjan Huizing, Ana Luisa Kadekaro, Caroline Le Poole, and Richard Spritz. The Bylaws Task Force was asked to review the existing PASPCR Bylaws and their amendments, especially regarding election procedures, and to propose revisions and recommendations for consideration by the PASPCR Council and the general membership. The proposed changes shown below were recently approved by vote (76 of 122 members voted, of which 89.5% voted “Yes” and 10.5% voted “No”). These recent changes will soon be available on the PASPCR website.

**Elections Results**

Congratulations to Caroline Le Poole, the new President Elect of PASPCR, and to Deborah Lang, John Pawelek and Vijay Setaluri, the Council Members for 2011-2013!

We thank Marjan Huizing, Ana Luisa Kadekaro and Prashiela Manga for their service the past three years on the Council!

**Bylaws Update**

In January 2010, PASPCR President Frank Meyskens appointed Tom Hornyak as the Chair of the Bylaws Task Force that also included Gertrude-Emilia Costin, Ana Luisa Kadekaro, Caroline Le Poole, and Richard Spritz. The Bylaws Task Force was asked to review the existing PASPCR Bylaws and their amendments, especially regarding election procedures, and to propose revisions and recommendations for consideration by the PASPCR Council and the general membership. The proposed changes shown below were recently approved by vote (76 of 122 members voted, of which 89.5% voted “Yes” and 10.5% voted “No”). These recent changes will soon be available on the PASPCR website.

**Approved Amendments**

1. Proposed Amendment to Article VI, Section 6.01 of the Bylaws, Article VI: NOMINATION AND ELECTION OF OFFICERS COUNCIL MEMBERS Section 6.01.

2. Proposed Amendment to Article VI, Section 6.02 of the Bylaws, Section 6.02.

3. Proposed Amendment to Rule and Regulation #3, “Schedule for Elections”

4. Proposed Amendment to Bylaws Article IV: COUNCIL, Section 4.07, Committees Section 4.07-e

5. Proposed Rule and Regulation #12, Standing Committees of the Council, 12. Standing Committees
LETTER FROM PASPCR
SECRETARY/TREASURER

It is my pleasure to inform you that our society has a healthy membership and is financially strong. Our total membership is now at 122. List of members include 26 students/fellows, 87 regular members, 4 joint IFPCS members and 5 honorary members. Some investigators from Europe and Asia have selected our society as their main pigment cell research organization.

I believe that everybody was impressed with the high quality of the 16th PASPCR meeting in Vancouver. Also the city is beautiful. We all congratulate Dr. Youwen Zhou on the excellent work with this meeting. Having significant surplus from the last 15th PASPCR conference in Memphis, I have offered to use part of these funds to support young scientists in the form of travel grants and to cover costs of travel and accommodation of two distinguished European speakers Dr. Collin Goding and Dr. Karin Schallreuter. Dr. Goding gave an excellent lecture. Dr. Schallreuter could not attend due to an accident, which led to femur fracture and hospitalization.

We distributed fourteen travel awards, which allowed 5 students, 8 postdoctoral fellows and one faculty to attend this important meeting. I also believe that, to fulfill the wishes of donors for the XVth PASPCR meeting in Memphis, the remaining balance should be used to support travel grants for the IPCC conference in 2011, Bordeaux, France. We should note that there is a strong need for such help for eligible investigators, since the funding for international travels is not readily available.

Importantly, I want thank the Johnson & Johnson Consumer Companies for their generous support of the meeting as well as for sponsoring the Aaron B. Lerner Lectureship. This year we were extremely happy to hear a lecture given by Dr. Heinz Arnheiter. Thank you Heinz for an outstanding presentation!

We all are very sad that Dr. Estela Medrano passed away on August 30th due to a car accident. It is an enormous loss not only to our society but also to the scientific community involved in melanoma and skin related research. Estela was an outstanding scientist, a wonderful person and a very active member in the PASPCR and SMR communities. This is a profound loss for her friends and pigment cell community. All of our sympathy is with her family.

Andrzej Slominski
PASPCR Secretary/Treasurer
Membership Application

PANAMERICAN Society for Pigment Cell Research

Please see next page for description of membership categories and remittance required with application. Mail, fax or e-mail completed application and remittance to the Secretary-Treasurer's office.

Type or print.

Name ___________________________________________________________ Degree(s) _______
last                      first                     middle
Faculty Title (if applicable) ________________________________ Yr of Appt _________
Department ________________________________________________________________
Institution ________________________________________________________________
Street Address ________________________________________________________________
City, state, zip ___________________________ Phone (______)___________________
Fax (______)_________________________ E-Mail ________________________________

Please check category for which you are applying. See next page for definitions and dues schedule.

___ Regular       ___ Student

Student Sponsorship: Sponsors of Students verify herewith that the applicant is a bona fide graduate student or postdoctoral fellow.

Sponsor signature ____________________________ Printed name ________________________________
Sponsor Institution ________________________________________________________________

Area of Research: We would appreciate your providing the following information. Please check your research interests.

Cell Biology Physics Comparative Biology
Biochemistry/Chemistry Clinical Melanin
Molecular Biology Melanoma Other: ________________________________

Please list the clinical areas in which you are certified: __________________________________________

Signature and membership start date

I, the undersigned, wish my membership in the PANAMERICAN Society for Pigment Cell Research to begin January 1, 2011.

_________________________________________        __________________________
Applicant's signature        Date
PANAMERICAN SOCIETY FOR PIGMENT CELL RESEARCH

2011 DUES

INVOICE DATE: November 9, 2010  DUE DATE: December 31, 2010

1. Contact Information (Please be sure all contact information is current and correct, including e-mail address)

Current Address

□ Corrections (please print CLEARLY)

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____________________________________________

Phone:  ____________________________________
FAX:  ____________________________________
E-mail:  ____________________________________

□ No Corrections Needed

2. Dues (Please mark the appropriate category below)

□ Regular ($154/yr) ($77 for PASPCR, $28 for International Federation of Pigment Cell Societies and $49 for an electronic subscription to the journal Pigment Cell and Melanoma Research)

□ Student ($40/yr) ($12 for PASPCR; $28 for International Federation of Pigment Cell Societies) [includes free electronic subscription to the journal Pigment Cell and Melanoma Research]

□ Second membership (if IFPCS dues are paid through another local society) ($77/yr)

Members of the SMR are exempt from the mandatory subscription of the PCMR through PASPCR, after certifying that the subscription has been paid as a part of the dues to the SMR, they pay $105.

3. Method of Payment (Please mark the total amount next to the preferred method of payment)

$________ Check  Please send check or money order in U.S. funds drawn only on a U.S. bank. Checks drawn on a non-U.S. bank will be returned. Make check payable to: PANAMERICAN Society for Pigment Cell Research or PASPCR.

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Signature:

PLEASE SUBMIT YOUR DUES

Return to: Andrzej T. Slominski, M.D., Ph.D., Secretary-Treasurer, PASPCR, Department of Pathology and Laboratory Medicine, University of Tennessee Health Science Center, 930 Madison Avenue, Suite 599, Memphis, TN 38163; Phone: 901-4483741; Fax: 901-4482435; e-mail: aslominski@uthsc.edu

Please return this form with your payment
THE 16th ANNUAL MEETING OF PANAMERICAN SOCIETY FOR PIGMENT CELL RESEARCH: “THE LATEST DEVELOPMENTS IN THE RESEARCH AND TREATMENT OF PIGMENTATION CONDITIONS AND MELANOMA”

Letter From the Organizer

From September 30th to October 2nd, British Columbia Cancer Research Centre, Vancouver, British Columbia, Canada hosted the 16th Annual Meeting of PanAmerican Society for Pigment Cell Research focused on the theme “The Latest Development in the Research and Treatment of Pigmentation Conditions and Melanoma”. This theme was designed to bring the clinicians as well as the basic scientists together in order to better develop ideas for future research collaborations and clinical application. The meeting was well attended, with 121 registrants. There was a significant presence of clinicians, judging from 23 U.S. and 10 Canadian registrants requesting AMA/FRCPC continued medical education credits. A total of 14 travel grants were awarded to trainees, young investigators and faculty members, which was made possible as a result of the financial success of the 2009 meeting held in Memphis.

The Presidential Address was delivered by Frank Meyskens who presented on “Fifteen years of Redox and Melanoma - Where are we headed?” The annual Lerner Lecture was presented by Heinz Arnheiter (NIH) who spoke on “2B or not 2B: the role of alternative splicing of MITF”.

The main meeting was built around six oral presentation sessions and two poster sessions. During Session 1, Melanoma: Bench to Bedside, several significant developments in research and treatment of melanoma were highlighted. The latest development in the study of melanin synthesis and the progress made for the treatment of pigmentation conditions were presented during Session 2, Melanin Synthesis and Pigmentation Therapies. Session 3, Physiology, Oxidative Stress and Neoplasia covered the topic of melanocyte physiology and oxidative stresses, and how they relate to melanocyte biology and neoplasia. Session 4, Greying, Photoaging, Photobiology and Phototherapy covered several topics related to graying, phototherapy, photobiology and photoaging. The latest developments in the investigation and therapeutic management of vitiligo were discussed during Session 5, Vitiligo, Pathogenesis and Therapy. Session 6, Melanocyte Development, Genetics and Animal Models was centered on animal models for the investigation of pigment cells and melanoma. Two poster sessions took place during this meeting. The first poster session was hosted by Dr. Greg Barsh and focused on abstracts reporting basic science aspects of melanocyte and melanoma research. The second poster session, chaired by Dr. Frank Meyskens, was primarily focused on clinical and translational science in the melanocyte and melanoma research.

It was an honor for us to host this meeting in Vancouver and to bring together distinguished scientists and clinicians and outstanding trainees interested in pigment cell biology and melanoma who shared the results of their most recent projects.

See you next year in Bordeaux, France, for the 21st IPCC!

Youwen Zhou,
Organizer of the 16th PASPCR Meeting

- // -
Dr. Meyskens presented a review of his substantial body of work focused on redox-related mechanisms and the role they play in melanoma. Transformation of normal melanocytes, which are under constant, if “low-grade” oxidative stress, to melanoma is accompanied by a switch from antioxidant to pro-oxidant responses. In addition to external stressors that induce oxidative stress in melanocytes, melanin synthesis itself generates reactive oxygen species (ROS). Furthermore, melamins can absorb metal ions that alter the polymer redox state, for example, presence of Fe ions can increase lipid peroxidation.

Interaction between metal ions and melanin may also contribute to melanoma initiation and progression. For example, UVB exposure results in morphologic changes as well as melanosome bleaching, which is significantly increased in the presence of copper ions and is accompanied by increased ROS generation. The increased oxidative load can contribute to cellular damage that initiates transformation. A number of regulatory pathways influence redox response in melanocytes including the APE/Ref-1 network, which can be induced by nitric oxide induced stress. A feedback loop modulating this pathway can lead to increased proliferation and metastatic potential. Resveratrol, an APE/Ref-1 inhibitor, may be a useful adjuvant in the development of preventative agents for melanoma. Furthermore, Ref-1 represents a druggable target for melanoma therapies.

Dr. Meyskens next addressed the question of whether heavy metal accumulation in melanocytes plays a role in transformation. Several anecdotal observation support a role for metals in increasing melanoma risk, particularly since groups exposed to certain metals exhibit increased rates of melanoma, including printers and lithographers exposed to metals such as chromium, patients with hip replacement that results on the release of large amounts of chromium and cobalt into the bloodstream. Metal exposure results in formation of foci in human melanocytes. Cells display aneuploidy when dosed with chromium is added at 0.1 ppm. The role of metal ions in melanocyte transformation may therefore play a key role in melanocyte transformation and will continue to be the focus of Dr. Meyskens’ studies.

ORAL SESSION 1: Melanoma: Bench to Bedside
Chairs: Dr. Sancy Leachman, Dr. Andrew Aplin

Plenary Lectures
Reviewed by Dr. Sancy Leachman

This session included three Plenary Lectures and four Oral Abstracts. The Plenary Lectures spanned genetic and epigenetic causes (and possible targets) of melanoma, the role of melanocyte development in melanomagenesis, and the current gaps that exist in moving molecular knowledge into clinical practice.

In the opening Plenary Lecture entitled “Signaling a Phenotype Switch in Melanoma”, Dr. Colin Goding proposed a rheostat-like model tied to the expression and acetylation of microphthalmia-associated transcription factor Mitf. This model helps to explain reversible phenotypic changes in melanoma cells that produce gain and loss of stem-cell-like properties and results in subpopulations of cells that are more capable of evading therapeutic measures. This process of phenotype switching has therapeutic implications if the phenotype can be switched to promote increased sensitivity to
therapeutic agents. He also presented a chromatin conformation capture assay to monitor subpopulations of melanoma cells. This assay might ultimately be applied to monitor the response of melanoma to treatment without depending on detection of specific expression products that might shift as phenotype switching occurs.

The second Plenary Lecture, “Alternative Pathways for Melanocyte Development”, reviewed the evidence supporting a Schwann cell precursor as the origin of melanocytes in the trunk. Dr. Patrik Ernfors presented a hypothesis with supporting data that challenges the previously held notion that melanocytes arise directly from the neural crest during neural tube closure and then migrate dorsolaterally between the dermomyotome and the overlying ectoderm, ultimately arriving at the basal layer by migrating ventrally through the developing dermis. He showed data demonstrating nerves projecting throughout the body that contained Schwann Cell Precursors in a stem/progenitor niche and discussed the role of the Hmx1 homeobox gene in regulating this process. He also discussed the role of signaling molecules such as insulin-like growth factor, platelet-derived growth factor, and neuregulin 1 in the determination of melanocyte fate from Schwann cell precursors. The identification of this developmental pathway may eventually present alternative mechanisms for targeting melanoma cells.

Finally, Dr. Vernon Sondak spoke about “Lessons Learned from Nearly Four Decades of Clinical Trials in Early Stage and Metastatic Melanoma”. In this presentation, he focused on major gaps that exist in our ability to apply advances in melanoma diagnosis and treatment to the care of patients. Specifically, he emphasized the need to recognize that 1) more rigorous prospective trial design frequently refutes data from apparently promising retrospective studies, 2) larger multi-center trials frequently fail to confirm results from smaller single-center trials, and 3) that data frequently is not mature enough to draw firm conclusions in humans for 10 years or more. He also showed data from two promising new melanoma therapeutic agents, ipilimumab and a selective V600E mutation specific BRAF inhibitor and discussed caveats in the trial results, including response and recurrence rates. Ultimately, in order to be clinically useful, promising therapeutic agents must proceed through rigorous, prospective, multicenter trials with enough follow-up to draw valid conclusions regarding efficacy.

Oral Abstracts
Reviewed by Dr. Sancy Leachman

The oral abstracts were selected for high quality and as outstanding examples of the promise of “Bench to Bedside” science.

Dr. Yang Wang (“Alpha 1 Antichymotrypsin is Aberrantly Expressed During Melanoma Progression and Predicts Poor Survival for Patients With Metastatic Melanoma”) presented a single center study to evaluate the role of alpha 1 antichymotrypsin as a prognostic agent for melanoma. She showed in a multivariate analysis that alpha 1 antichymotrypsin expression is statistically significantly increased in invasive and metastatic melanomas, but not in benign lesions or melanoma in situ, suggesting that it is a promising prognostic histologic marker for melanoma.

Dr. Ryan Dellinger (“UDP-Glucuronosyltransferases (UGTs) as Metastasis Suppressors in Melanoma”) showed data suggesting that UDP-Glucuronosyltransferases (UGTs) suppress melanoma invasion and possibly metastasis. If this finding can be confirmed in vivo in pre-clinical models, UGTs may be a promising adjunct to treatment of melanoma.

Dr. Andrew Aplin (“Role and Regulation of FOXD3 in Melanoma”) discussed the role of FOXD3 regulation in melanoma development, particularly that of BRAF-mutant melanoma and the impact FOXD3 may have on resistance to selective BRAF inhibition. He also discussed the rational investigation of combination agents using this data.
Finally, Dr. Caroline Le Poole (“Occult Expression of Melanocyte Differentiation Markers in Diseased Lung Tissue Provides New Treatment Opportunities for Lymphangioleiomyomatosis”) introduced a recently identified expression of melanocyte differentiation markers in lymphangioleiomyomas derived from tuberous sclerosus patients. The existence of these antigens raises the possibility of immunotherapy for angiolieomyomas and other melanoma antigen expressing tumors using melanoma differentiation antigens as targets.

POSTER SESSION 1: Basic Science
Dr. Gertrude-Emilia Costin

Twenty-three posters were included in this session focused on “Basic Science”. The posters covered a wide range of topics, such as the involvement of various factors in regulation of pigmentation in melanocytes, identification of agents that could potentially induce melanoma or factors involved in melanoma progression or chemoresistance. Several posters focused on fundamental aspects of melanin biology, including its functional role or the effect of heavy metals on melanin biochemistry. Other posters presented interesting laboratory methods used to analyze post-inflammatory inflammation using colorimetry and diffuse reflectance spectroscopy or to evaluate quantitatively pigmented skin lesions using near-infrared fluorescence imaging. The session was successful and provided good opportunity of interaction between presenters and the audience interested in the various topics covered.

ORAL SESSION 2: Melanin Synthesis and Pigmentation Therapies
Chairs: Dr. Marjan Huizing, Dr. Haishan Zeng

Plenary Lectures
Reviewed by Dr. Marjan Huizing

Dr. Esteban Dell’Angelica presented the lecture entitled “Animal Models of Hermansky-Pudlak Syndrome”. Hermansky-Pudlak syndrome (HPS) is a group of human disorders of lysosome-related organelle biogenesis. Clinical symptoms include oculocutaneous albinism and platelet delta-storage pool deficiency, and some other sporadic features such as immune deficiency and pulmonary fibrosis. There are now 8 human HPS subtypes identified (HPS1-8), which encode proteins of unknown function, which are members of any of 4 stable protein complexes - BLOC1-3 or AP-3. Dr. Dell’Angelica’s group studied the role and interactions of these 4 complexes by using HPS mice and fly models. By creating double knock-out models of two protein complexes, and subsequently assessing the severity of the resulting phenotype (enhanced phenotype vs similar phenotype as the single mutant), predictions could be made about the pathways and interactions of these complexes. In addition, a forward genetic screen using fly models of HPS gave indications for novel modifiers of the HPS protein complexes.

Dr. Rox Anderson presented “Laser treatment for Pigmented Conditions: What Works and What Not?” Dr. Anderson presented the concepts of “selective photothermolysis”, using (laser) light as a surgical tool, where the (light) energy directed into a specific (skin) target area produces sufficient heat to damage the target while allowing the surrounding area to remain relatively untouched. Dr. Anderson touched on different skin pigmentation disorders, illustrated with images of patients he treated using this technique. Such disorders included congenital melanocytic nevi, pseudofolliculitis barbae, nevus of Ota (and similar conditions), phakomatosis pigmentovascularis, pulmo-plantar nevi, and minocyclin-induced hyperpigmentation.
Four studies in this session examined pigmentation from a wide range of regulatory control points, including bioelectric fields, antioxidant genes, endoplasmic reticulum protein processing and the melanocortin 1 receptor.

Dr. Prashiela Manga (“Delineation of the Unfolded Protein Response in Melanocytes: Potential Implications for Vitiligo and UV Response”) discussed the unfolded protein response in melanocytes and potential implications for vitiligo. The Unfolded Protein Stress Response (UPR) is a regulator of the homeostasis of the endoplasmic reticulum (ER). Immature protein accumulation in the ER and the resulting organelle stress induces the activation of the UPR. When the 3 pathways that form the UPR, Ire1, Perk and Atf6 are released from heterodimers formed with the ER chaperone protein, BiP, the UPR signaling begins. X-box binding protein 1 (Xbp-1) is spliced as a consequence of Ire1 phosphorylation and nuclease activation. UPR gene expression is regulated by the transcription factor encoded by the spliced RNA. In order to restore homeostasis, UPR signaling decreases global protein translation and up-regulates the ER chaperone expression. The Ire1 pathway has been implicated in vitiligo neogenesis. Thus, the role of the UPR in melanocyte ER stress was investigated. The chemotoxin, Thapsigargin, which is known to disturb the calcium equilibrium in the ER and activate the UPR, was used to treat mouse melanocytes. Six hours of thapsigargin treatment resulted in the up-regulation of Ire1, followed by increased splicing of Xbp1 mRNA and associated transcription factor activity. The other 2 signaling pathways in the UPR, Perk and CHOP, a downstream substrate of PERK, were phosphorylated and ATF6 was cleaved at the 6-12 hour time points following the thapsigargin treatment. The ER chaperones, BiP and Erp1 were up-regulated and tyrosinase was down-regulated. Oxidative stress resulted in Xbp1 splicing in melanocytes. These data suggest that the UPR plays a role in the melanocyte response to ER and oxidative stress, and in this way, aberrant UPR may be involved in the disease process, vitiligo and melanoma related drug resistance.

Dr. Connie Lin (“Elemental Bi-mineral Complex Inhibits Tyrosinase Expression and Melanogenesis in vitro”) described an elemental bi-mineral complex that inhibits tyrosinase expression and melanogenesis in vitro. Bioelectric fields have been shown to stimulate wound healing by enhancing the directional migration of epidermal cells. An elemental bi-mineral complex was used that generates biomimetic electrical microcurrents to evaluate its effect on melanogenesis in the skin. Following 7 days of topically applied elemental bi-mineral complex, the melanin accumulation was significantly inhibited in a pigmented epidermal equivalent. The effect on pigmentation was measured by a reduction in Fontana-Masson histochemical staining and decreased tyrosinase mRNA levels in the pigmented epidermal equivalents. Mouse B16 melanoma cells and MNT-1 cells were used to show that the elemental bi-mineral complex reduced the tyrosinase and tyrosinase related protein 1 promoter activity using luciferase reporter assays. Elemental bi-mineral complex treatment of the co-cultured HaCaT keratinocyte cell line and melanocytes resulted in an inhibition of the tyrosinase mRNA. Human skin explants were topically treated with the elemental bi-mineral complex for 7 days and a decreased in pigmentation was measured. These data confirm that the elemental bi-mineral complex inhibited epidermal melanization and would be a good candidate for topical therapy of hyperpigmented skin lesions.

Dr. Viki Swope (“Evidence for Stimulation of Pigmentation of Engineered Skin Substitute by the Potent Melanocortin Analog 4-Phenylbutyryl-His-D-Phe-Arg-Trp-NH2”) presented evidence for stimulation of pigmentation of engineered skin substitute by the potent melanocortin analog 4-Phenylbutyryl-His-D-Phe-Arg-Trp-NH2. Melanoma is the deadliest form of skin cancer and has been linked to acute sun exposure. DNA damage is directly correlated to the dose of UV irradiation and the capacity of the melanocytes to repair the damage. The melanocortin 1 receptor (MC1R) and its agonist
α-MSH regulate pigmentation and, following UV irradiation, reduce reactive oxygen species, increase DNA repair and decrease apoptosis. Individuals heterozygous for MC1R gene allelic variants, R151C, R160W or D294H have an increased incidence of melanoma, but do respond to α-MSH, albeit at a reduced level. The goal of these studies was to identify a small potent α-MSH analog that can be used topically as a preventive strategy for melanoma. The effect of the small tetrapeptide α-MSH analog, 4-Phenylbutyrly-His-D-Phe-Arg-Trp-NH2 was tested on engineered skin substitutes containing both dermal and epidermal components. The Fontana-Masson stained area of melanin was increased significantly after 9 days of analog treatment in the culture medium as measured by image analysis. Also, the number of TRP-1 labeled melanocytes was significantly increased by analog treatment. Pigmentation was regulated in a skin model by the small α-MSH tetrapeptide analog. Future studies will investigate the effects of the analogs on repair of UV-induced DNA damage, apoptosis and generation of oxidative stress when topically applied to engineered skin.

Dr. Pamela Cassidy ("Protection of UV-irradiated Epidermal Tissue from Donors with Loss-of-Function MC1R Genotypes by the Natural Product Sulforaphane") described protection of UV-irradiated epidermal tissue from donors with loss-of-function MC1R genotypes by the natural product. Activation of MC1R in UV-irradiated melanocytes results in increased DNA repair, reduced apoptosis, decreased oxidative stress and increased melanogenesis affording additional protection to the melanocytes from DNA damage. Humans with MC1R loss of function (LOF) mutations characterized by the red hair phenotype have a 4-fold increased risk for melanoma. Individuals heterozygous for LOF mutations are at 2-fold increased risk. Sulforaphane (SF) is a small molecule naturally produced in cruciferous vegetables. SF has been shown to protect melanocytes from apoptosis and oxidative damage following UV irradiation, even under conditions where MC1R is not activated. Human skin biopsies were harvested from individuals with both wild-type and LOF MC1R and analyzed by qPCR in order to characterize their antioxidant response to UV following SF pretreatment. The expression of genes encoding the antioxidant proteins heme oxygenase 1, thioredoxin reductase 1 (TR1), peroxiredoxin 1 and glutathione peroxidase 2 (GPx2) were increased by SF. Expression of TR1 and GPx2 was dramatically decreased in tissue treated with UV alone. In tissue pretreated with SF, the expression of these two genes was restored to and in some cases significantly exceeded levels found in untreated controls. Importantly, SF restored the expression of these antioxidant genes in tissues from donors with LOF MC1R mutations. It can be concluded from these studies that SF has the potential to increase antioxidant capacity of UV-irradiated human skin including that of individuals with LOF MC1R mutations. Also, the expression of TR1 and GPx2 might serve as intermediate biomarkers of efficacy in human trials of SF as a melanoma prevention agent.

AARON LERNER LECTURE: “2B or not 2B: the Role of Alternative Splicing of MITF”
Dr. Heinz Arnheiter
Reviewed by Dr. Prashiela Manga

The recipient of the 2010 Lerner Award was Dr. Heinz Arnheiter of the National Institute of Neurological Diseases and Stroke at the National Institutes of Health. Dr. Arnheiter presented a review of his work on the microphthalmia transcription factor, MITF. The first mutation at the MITF locus was identified by Paula Hertwig in irradiated mice. The gene was cloned after mice with transgene insertions on chromosome 6 were found to be allelic to the original microphthalmia mice. The gene was found to have multiple exons and was linked to multiple promoters. In fact, a number of isoforms were found to exist due to alternative promoter use and alternative splicing, with post-translational modification adding to the complexity of regulation. MITF is ubiquitously expressed, although levels vary widely between tissues and there are a number of tissue-specific isoforms. Mitf phosphorylation has been shown to cause an increase in activity, but leads to a decrease in protein stability. Serine 73 is
one of the protein phosphorylation sites. It is located in a codon that is part of an exonic splice enhancer conserved to assure correct exon 2b splicing. Activity of Srp30c, a member of the serine/arginine-rich protein family that has multiple splicing-related functions including regulation of alternative splicing, has been shown to favor 2b exclusion. Regulation of 2b splicing is important during development and for cell cycle regulation and will be the focus of further research.

ORAL SESSION 3: Physiology, Oxidative Stress and Neoplasia
Chairs: Dr. Andrzej Slominski, Dr. Caroline Le Poole

Plenary Lectures
Reviewed by Dr. Zorica Janjetovic

The 16th PASPCR Annual Meeting has been held September 30 - October 2, 2010 in BC Cancer Agency, Vancouver, Canada. Special event of the conference was Oral Session 3, held on October 1, with the invited lecturers Dr. Arup Indra, from Departments of Dermatology and Pharmaceutical Sciences, OSU and Dr. Doug Grossman, from Huntsman Cancer Institute and the Department of Dermatology at the University of Utah School of Medicine, Salt Lake City, Utah.

Dr. Arup Indra in his lecture entitled “Nuclear Receptor Mediated Paracrine Signaling in Tumor-Microenvironment During Melanoma Progression” gave an insight of his goals to develop effective treatment strategies for skin cancer and identification of potential drug targets through animal models. Human melanoma cancers express aberrant retinoid receptors. During melanoma progression, epidermal keratinocytes express progressive loss of retinoid receptors. Using animal model to generate ablated retinoid receptor, Dr. Indra studied melanoma progression following acute UV irradiation. Keratinocytic RXR was found to have a protective role on UVR induced keratinocyte and melanocyte proliferation, oxidative stress mediated DNA damage and cellular apoptosis. The conclusion of this study was that the loss of RXR in epidermal keratinocytes in cooperation with CDK4 promoted formation of metastatic melanoma.

Dr. Doug Grossman’s lecture entitled “Targeting Oxidative Stress for Melanoma Chemoprevention” concentrated on his lab studies on the regulatory mechanisms of apoptosis in skin cells: melanocytes and keratinocytes, and dysregulation of apoptosis in melanoma and non-melanoma skin cancer. The study also included nevus senescence and the role of UV-induced oxidative stress/damage in the development of melanoma. His findings suggest a potential alternate Rb-independent tumor-suppressor function of p16 as an endogenous regulator of carcinogenic intracellular oxidative stress. P16 predisposes to melanoma over other cancers probably because melanocytes have increased susceptibility to oxidative stress in the context of p16 depletion. Dr Grossman in his lecture explained the preliminary data based on the use of the antioxidant N-acetylcysteine (NAC) prophylactically before acute UV exposure in protection of melanocytic nevi from pro-oncogenic oxidative stress resulting from accurate UV exposure and ultimately reduces long-term melanoma risk. We are all looking forward to future studies from Grossman’s lab in hope to soon find the antioxidants to be used as chemopreventive agents in patients at risk for melanoma.

Other topics were interesting as well. We thank all distinguished scientists and clinicians for enlightening our knowledge in photobiology and its influence on melanomagenesis.

Oral Abstracts
Reviewed by Dr. Ana Luisa Kadekaro

Dr. Sun Yang (University of California Irvine) presented the lecture entitled “NO Stress Mediated by Neural NO Synthase (nNOS), A Potential Accelerator of Melanoma Progression?” The objective
of the study was to determine whether nitric oxide (NO) known to be generated after UVR exposure is a contributor factor in the development of melanoma. The author showed that increased NO generated by treatment with DETA, a NO donor, increased melanoma proliferation and invasion capacity. These effects correlated with an increase of several proteins such as APE/Ref-1, NFkB, c-Jun, JunD, Bcl2 and Snail. Next, the author wanted to address which of the NOS isoforms (iNOS, eNOS, nNOS) has a prominent role in generating NO in melanoma. Since melanocytes are derived from neural crest, the author focused her studies on the neural NO synthase (nNOS), that turned out to be elevated at the protein level in cultured melanoma cells as well as in melanoma tumor. Silencing of nNOS with siRNA reduced melanoma proliferation and invasion potential, which correlated with reduced expression of their biomarker proteins. Screening for suitable nNOS inhibitors revealed that JI-11 significantly attenuated NOS. The author proposed that targeting nNOS is a promising strategy for melanoma prevention.

Dr. Lidia Kos (Florida International University) presented the lecture entitled “Endothelin-3 Accelerates Tumor Growth and Promotes Metastasis in a Mouse Model of Melanoma”. The objective of the study was to determine the role of microenvironmental factors on the development and progression of melanoma, in particular, endothelin-3 (Edn3) that was shown to be implicated in several processes of malignancy in previous in vitro studies. The authors generated a model for the study of melanoma progression by crossing mice over-expressing glutamate receptor 1 under the dopachrome tautomerase promoter (DCT-Grm1) and mice that over-express Edn3 under the keratin 5 promoter (K5-Edn3). The mice DCT-Grm1/K5-Edn3 showed reduced latency period for developing tumors, which grew at much faster rates when compared to Grm1 transgenic mice. On the contrary of Grm1 mice that showed spontaneous melanoma like lesions in the ears and tails, DCT-Grm1/K5-Edn3 mice also developed tumors on the dorsal area. Moreover the mice presented melanocytic lesions in the lung, spleen and lymph nodes. The histological analysis of the tumors confirmed their metastatic nature, indicating that Edn3 over-expression not only reduces the time of onset and progression of tumors, but also is involved in the processes that lead to metastasis.

Dr. Ana Luisa Kadekaro (University of Cincinnati) presented the lecture titled “p53 Activation Is Essential for the Protective Effect of Alpha-MSH Against Oxidative Stress in Human Melanocytes”. The objective of the study was to determine the importance of p53 on the protective effects of alpha-MSH against the carcinogenic effect of UVR on melanocytes. In previous studies the author had shown that α-MSH increased the expression and activity of antioxidant enzymes, promoting the reduction in oxidative stress induced by UVR exposure. In this study the author showed evidence that α-MSH enhanced the phosphorylation of p53 on serine 15 residue through a PKA/p38 activation, further augmenting the stabilization of p53 induced by UVR. Nutlin-3 was used to increase the endogenous levels of p53, and the results showed that melanocytes were equally protected from oxidative DNA damage, independent of the expression of a functional or non-functional melanocortin receptor (MC1R). The study suggests that targeting p53 is a promising strategy in melanoma prevention that might benefit individuals that are more susceptible to develop melanoma.

ORAL SESSION 4: Greying, Photoaging, Photobiology and Phototherapy
Chairs: Dr. Zalfa Abdel-Malek, Dr. Nikiforos Kollias

Plenary Lectures

Reviewed by Dr. Gertrude-Emilia Costin

Dr. Zalfa Abdel-Malek presented the lecture entitled “Regulation of MC1R in Human Melanocytes” focused on her group’s recent data that investigated the potential roles for transcriptional
regulation and agonist-promoted desensitization of MC1R, using primary cultures of human melanocytes from different donors. Several agents were used to investigate their effect on MC1R gene expression; the experiments showed that MC1R expression was upregulated by α-MSH and ACTH, forskolin and TPA, suggesting an effect mediated by cAMP and PKC. By comparison, MC1R expression was not affected by human-defensin 3 (HBD3) or by an analog of agouti signaling protein, ASP-YY. Furthermore, pre-treatment with ASP of HBD3 inhibited the activation of MC1R by α-MSH. Several other experiments focused on the expression of G protein coupled receptor kinases (GRK) 2, 3, 5, 6 and β-arrestin 1, which did not correlate with MC1R genotype, activation of the receptor by alpha-MSH or degree of sensitization.

Reviewed by Dr. Prashiela Manga

Dr. Ilt Hamzavi presented the lecture entitled “Pigmentation and Photobiology”. Dr. Hamzavi reviewed the phototherapeutic options available for the treatment of vitiligo, which include psoralen + UVA treatment, narrowband-UVB and Excimer laser. Selection of treatment methods can be aided by the recognition of variables that impact treatment. Dr. Hamzavi has been developing a scoring system that would aid in this process. In addition, selection of adjuvants, including immunosuppressants, vitamin D analogues, and corticosteroids can improve outcome.

Oral Abstracts
Reviewed by Dr. Gertrude-Emilia Costin

Dr. Hequn Wang presented the lecture entitled “In Vivo Confocal Imaging and Micro-Raman Spectroscopy for Skin Cancer Detection”. Dr. Wang introduced two methods used for skin cancer diagnosis: in vivo confocal imaging and micro-raman spectroscopy. The confocal imaging provides a powerful method for performing non-invasive, depth-resolved tissue evaluation given its optical sectioning capability. Raman spectroscopy measures molecular vibration and can provide fingerprint-type specific signatures for molecular identification. The results presented were obtained during a pilot study that used a system based on a murine squamous cell carcinoma model. Raman spectral measurements of skin of 24 tumor-bearing mice showed that Raman spectra of normal mouse epidermis and dermis were significantly different. Changes in Raman spectra of epidermal and dermal layers were observed between the normal animals and tumor-bearing animals and these differences could be used to differentiate cancer from normal skin.

Dr. Mei Yu presented the lecture entitled “Deficiency in Nucleotide Excision Repair Family Gene Activity, Especially Lack of ERCC3 Activity, is Associated With Non-pigmented Hair Fiber Graying”. The study was focused on microarray analysis, qPCR and immunohistochemistry of pigmented and non-pigmented hair follicles collected from the same individuals, with the aim of discovering gene expression pattern unique to non-pigmented hair follicles. Interestingly, the microarray analysis indicated several nucleotide excision repair family genes that exhibited statistically significant lower expression in non-pigmented upper hair sheaths and non-pigmented hair bulbs. Experiments using human epidermal melanocytes showed that ERCC3 siRNA interference was associated with reduced mRNA for ERCC3 and a reduction in melanogenesis associated mRNAs for TYR, TYRP1 and TYRP2. The data showed that deficiency in nucleotide excision repair family gene activity, especially the lack of ERCC3 activity, is associated with a reduction in the ability to produce melanin in gray hair.

Dr. Jiali Han presented the lecture entitled “Genome-wide Association Studies: Opportunities in Cohorts”. In this study, 10,000 existing GWAS samples with 2.5 million HapMap SNPs were used to conduct analysis of pigmentary phenotypes such as natural hair color, eye color, and tanning ability, as
well as mole counts and skin cancers. New pathways involved in human nevogenesis and pigmentation were identified and confirmed in independent samples. For example, GWAS on skin cancers identified a SNP near human telomerase genet to have an opposing effect on the risks of basal cell carcinoma and melanoma. The study confirmed that telomere lengths in peripheral blood leukocytes were associated with the risks of basal cell carcinoma and melanoma in an opposite direction.

POSTER SESSION 2: Clinical-translational
Reviewed by Dr. Frank Meyskens

This session was concerned with the broad topic of clinical translational activity and focused mainly on non-malignant cutaneous diseases. Of most interest to this reviewer was the use of dermatoscopy and high tech assessments of lesions using measurements of polarization techniques and volatile signatures of lipids to assess the various lesions, potentially including distinguishing non-malignant and malignant diseases. Also of considerable interest, was the focus on the role of oxidative stress (both nitric oxide and reactive oxygen species) on cutaneous aging and damage. There also seems to be progress in the development of compounds to suppress this process and it appears that cotinus coggygria extracts from the smoke tree may both reduce pigment deposition and enhance the elastic fiber network resulting in improved skin tone. The session was very successful and much vigorous conversations occurred.

ORAL SESSION 5: Vitiligo, Pathogenesis and Therapy
Chairs: Dr. Harvey Lui, Dr. Gisela Erf

Plenary Lectures
Reviewed by Dr. Gisela Erf

Dr. Richard Spritz (“Vitiligo Susceptibility Genes”), University of Colorado School of Medicine, presented an overview of his work on vitiligo susceptibility genes. He emphasized that the etiology of vitiligo can be summed up as an organ-specific autoimmune disease, involving multiple genes as well as environmental triggers. While the nature of the environmental triggers is difficult to address, excellent scientific tools are available to study the inherent susceptibility for this complex disease. Through the organization of an international multi-center consortium, Dr. Spritz and colleagues were able to conduct a comprehensive genome wide association study, identifying 17 loci containing highly significant single-nucleotide polymorphisms. Of these, the strongest associations were found for major histocompatibility (MHC) class I and II genes (HLA class I and II) and for a number of other immune-related genes. Tyrosinase, a key melanocyte enzyme, was the only major non-immune gene identified as a candidate gene. Interestingly, using “age of vitiligo onset” as a qualitative trait, MHC class I and II genes emerged as genes mediating this trait in addition to vitiligo susceptibility. This genome wide association study further highlights the complex polygenic and autoimmune basis of generalized vitiligo and emphasizes the need for dermatologists and immunologists to work together in addressing vitiligo treatment and prevention strategies.

The next presenter, Dr. Youwen Zhou (“Vitiligo Pathogenesis: Clues from Transcriptome Analyses”), University of British Columbia, used transcriptome analyses of vitiligo lesional and non-lesional skin to gain insight into vitiligo pathogenesis. Using this approach, Dr. Zhou and colleagues observed a concurrent decrease in the expression of Schwann cell- and melanocyte-related genes in lesional compared to non-lesional skin. Additionally, melanocyte loss in lesional skin was associated with greatly reduced numbers of Schwann cells. Considering the common developmental origin of Schwann cells and melanocytes, the close proximity of these two cell-types in superficial dermis and
the ability of Schwann cells to produce neurotrophic factors, the authors hypothesized that Schwann cells may play a supportive role in melanocyte growth and survival. Subsequent in vitro studies demonstrated growth promoting effects of Schwann cell conditioned medium on melanocytes but no effect of melanocyte conditioned medium on Schwann cell growth and survival. Transcriptome analysis also confirmed a role of innate immunity in vitiligo, specifically a role of natural killer cells. These observations suggest consideration of Schwann cell- and innate immune-activity in the etiology and progression of vitiligo and in repigmentation efforts of lesional skin.

The third plenary speaker in this session was Dr. Ahmed Alissa (“Recent Advances in Surgical Treatment of Vitiligo”) from Riyadh, Saudia Arabia, who discussed surgical approaches for the treatment of vitiligo. Advantages and disadvantages of autologous transplants using punch and blister grafts were addressed. For these procedures, space limitations for the transplant emerged as the major disadvantage. Dr. Alissa then shared his eight years of experience with “autologous non-cultured melanocyte-keratinocyte transplantation”. For this transplantation method, single keratinocyte and melanocyte cell suspensions are prepared from a thin slice of autologous non-lesional skin by trypsinization and cells were mixed at a ratio of 40 keratinocytes to 1 melanocyte. The cells are then injected into the depigmented skin. On average, the treated skin will have stable pigmentation in approximately two months. While this procedure is quick and can be successfully used for large areas of vitiligo skin, there are some adverse effects such as a rim that is not fully repigmented and areas of hyperpigmentation. Additionally, for success it is important that the vitiligo lesion has to be stable and the donor skin is healthy. The discussion on the autologous non-cultured melanocyte-keratinocyte transfer was followed by a report on the use of Q-switched pigmented laser as a depigmentation device for resistant pigmented areas in vitiligo patients with wide-spread depigmentation. This method was successful with few adverse effects. However, recurrence of pigmentation can occur, particularly in males.

Oral Abstracts

Reviewed by Dr. Davinder Parsad

Dr. Gisela Erf (“Environmental Triggers of Vitiligo Expression in Vitiligo Susceptible Smyth Line Chickens”) highlighted that her laboratory is focusing on mechanisms underlying the development of vitiligo in susceptible Smyth line chickens with special focus on environmental triggers. Like human vitiligo, Smyth line vitiligo (SLV) is a multifactorial disorder involving 1) a genetic component, which is manifested in part as an inherent melanocyte defect; 2) an immune system component, including melanocyte-specific cell-mediated and humoral immunity; and 3) an environmental component that triggers the expression of vitiligo in vitiligo-susceptible individuals. The Smyth line chicken model provides unique opportunities to study the etiology of vitiligo. Recently, a role for an environmental factor in the expression of vitiligo was suggested and three environmental factors that may have influenced the expression of SL vitiligo were identified. Included were housing condition, status of Mycoplasma synoviae infection, and turkey herpes virus (HVT) vaccination status, however, HVT emerged as a strong candidate for an important environmental factor in SL vitiligo. In this presentation, Dr. Erf presented her data on age at HVT vaccination on SLV expression. Groups of HVT-negative chicks reared in isolation were injected with HVT at 2, 4, 6, 10, 15 or 18 weeks of age, moved to conventional farm conditions post HVT injection, and monitored for SLV incidence until they were 20 weeks of age. They found that compared to siblings injected with HVT at hatch and reared on the farm, injection of HVT at 2, 4 or 6 weeks of age resulted in a 20, 35 and 60% reduction in SLV incidence respectively. HVT administered when the chickens were 10 weeks or older did not trigger expression of SLV beyond the low incidence observed in HVT negative chickens reared in
Dr. Davinder Parsad (“Defining Stability in Vitiligo Based on Adhesion of Melanocytes: A Comparative Study of Stable vs Unstable Disease”) presented findings of their comparative study of stable vitiligo vs unstable disease. In this study 14 patients were enrolled, 7 were having stable vitiligo and 7 were having active disease. Stable vitiligo was defined as having no new lesions and no progression of existing lesion for at least 2 years. For unstable vitiligo, those patients showing new lesions or progression of existing lesions over last 6 weeks were selected. Culture was established from perilesional areas and studied for morphological changes, adhesion to collagen type IV and caspase3 expression. Melanocytes were also treated with okadiac acid and then annexin V expression was checked and compared between control, stable and unstable vitiligo patients. Melanocytes cultured from unstable vitiligo patients showed some significant morphological changes. Perinuclear region of unstable vitiligo patients melanocytes was bigger in size whereas in stable and control melanocytes perinuclear region was normal in size. Unstable vitiligo melanocytes showed significantly low adhesion to collagen type IV as compared to control and stable vitiligo melanocytes. After the treatment with okadiac acid the melanocytes from unstable vitiligo patients showed significantly more Annexin V staining as compared to the stable melanocytes. In this study, the authors demonstrated that melanocytes in the unstable vitiligo patients were in their detachment phase which ultimately leads to apoptosis of these cells whereas melanocytes cultured from stable vitiligo patients and control were morphologically normal without any adhesion defects. These morphological and adhesion findings support theory of melanocytorrhagy as the primary defect underlying melanocyte loss in unstable vitiligo. This finding has important implications as these changes can be considered as marker for defining stability of vitiligo. The stability status of vitiligo is the single most important prerequisite in case selection for vitiligo surgery, like non-cultured suspension or other cellular or tissue grafts. However, there is no consensus regarding the minimum required period of stability.

Dr. Yuansheng Huang presented a lecture entitled “Vitiligo Lesional Gene Expression Profile: Correlation With Clinical Subtypes and Therapeutic Response”. Vitiligo is a common depigmentation condition characterized by destruction of melanocytes due to mechanisms that are not clear at present. In addition, the full extent of cellular abnormalities in vitiligo affected skin is unclear. To provide further clues to understand vitiligo pathogenesis and to determine if additional cellular abnormalities are present in vitiligo, Dr. Huang’s group performed systematic transcriptome analyses on skin biopsies from lesions and peri-lesional normal skin of patients with vitiligo vulgaris. The authors examined their relationship to clinical subtypes of segmental vitiligo (SV) or non-segmental vitiligo (NSV) and patients therapeutic response to treatment. Dr. Haung presented result from this study involving paired lesional and perilesional skin biopsies obtained from 12 patients of NSV and 5 patients of SV. Gene expression changes were determined by DNA microarray analyses using 41,059 gene probes. Significant gene findings were localized to cells in skin biopsies using multi-colored confocal immune fluorescence microscopy, and analyzed according to patients disease subtypes and clinical course. They found that gene expression pattern of NVS and SV skin lesions were almost identical with few gene expression difference. Patients with good therapeutic response had recent onset or recent disease progression. He concluded that SV and NSV are almost identical in molecular signatures of lesional skin consistent with a common pathogenesis for both. As vitiligo with recent onset has subclinical evidence of inflammation and less complete loss of melanocytes, early treatment is important to maximize therapeutic effect.

Reviewed by Dr. Prashiela Manga

Dr. Sherif Awad (“Chinese Cupping: A Simple Method to Obtain Epithelial Grafts for the Management of Resistant Localized Vitiligo”) presented a review of surgical approaches used in the
treatment of vitiligo. In particular, he presented data aimed at evaluating the use of a Chinese cupping device to induce blisters for epithelial grafting. The procedure involves the use of plastic cups (which can vary in diameter from 1.5 to 6.5 cm). The cup is applied to the area where skin is to be harvested. Vacuum pressure is applied and after two to three hours, blisters form. The roof of the blister was removed and grafted to a vitiligo lesion that had been dermabraded in preparation. This approach was used on twenty vitiligo patients who had failed to respond to phototherapy. Patients were followed for a year. This procedure was successful in 80% of cases and resulted in matched repigmentation. The method was thus found to be effective, inexpensive and did not result in significant scarring at the harvest site. Medium size cups were found to be preferably with small cups yielding insufficient cells and larger cups failing to maintain pressure. Failure of the treatment in 20% of patients was found to be correlated with non-compliance of with phototherapy regimens. Cupping for blister formation and subsequent grafting was thus found to be an accessible and effective approach for repigmentation of vitiligo lesions in this cohort.

TRANSLATIONAL RESEARCH DISCUSSION ON VITILIGO PATHOGENESIS AND THERAPY
Moderator: Dr. Youwen Zhou
Reviewed by Dr. Youwen Zhou

This unique open discussion session was designed to bring together basic scientists and clinicians together to iron key issues faced by clinicians and vitiligo patients. The issues discussed include: vitiligo therapy: when to start treatment? How to predict a therapeutic response? What is the role of systemic therapies such as systemic steroids? The conclusions will be summarized and published at a later time.

ORAL SESSION 6: Melanocyte Development, Genetics and Animal Models
Chairs: Dr. William Pavan, Dr. Catherine van Raamsdonk

Plenary Lectures

Reviewed by Dr. Robert Cornell

There is evidence from many animal models that, at least for certain organs, the cells that contribute to embryonic structures do not later contribute to adult organs. Instead, the adult organs are derived from stem cells that are set aside during embryogenesis. Reliable markers for most classes of stem cells have not been identified, and the genetic regulation of their deposition during embryogenesis and their recruitment later in development remains unclear. Dr. David Parichy (University of Washington) has been addressing this issue using zebrafish stripes as a model organ system. With elegant time lapse imaging, fate map studies and analysis of a mutant derived from a forward genetic screen (Picasso), he showed that while Erbb3 signaling is dispensable for the development of pigment stripes in embryos, it is essential for their development in adults. Interestingly, through timed application of a selective Erbb3 inhibitor, he found that Erbb3 signaling is required not when adult pigment stripes are forming, but rather several weeks earlier, during embryogenesis. This implies that Erbb3 is necessary to set aside a population of stem cells that are competent to later be recruited to make pigment cells. He also reported that a mutant with reduced adult but not embryonic melanophores (Bonaparte) corresponds to a poorly-characterized nuclear zinc-finger protein that is expressed in fibroblasts under the skin that are analogous to mammalian dermis. Forced overexpression of Kit ligand rescues melanophore development in Bonaparte mutants, arguing that Bonaparte is necessary for expression of Kit ligand in the skin. Finally he reported on a third mutant with selective defect in adult but not embryonic
melanophores (Puma) corresponds to alpha tubulin. In puma mutants there is reduced stability of microtubules and it appears that it is required for proliferation and survival of melanophores during metamorphosis. These studies provide insight into the mechanisms of pigment stem cell biology.

Reviewed by Dr. Catherine van Raamsdonk

Dr. Victor Tron (Queen’s University, Kingston, Ontario, Canada) presented on “MicroRNA and Melanoma Progression”. Previous studies of miRNAs, small noncoding RNAs that regulate mRNA, showed that there are differences in miRNA expression between benign nevi and primary melanoma. In his talk, Dr. Tron presented a study in which 470 different human miRNA’s were evaluated in 8 metastatic melanomas and in 8 benign nevi using the Agilent MicroRNA v1 array. Both FFPE (formaldehyde fixed paraffin embedded) and frozen tissue samples were found to give good results. There was a clear hierarchical clustering of the metastatic melanoma from the benign nevi and 31 miRNAs were differentially expressed. Of particular interest was the miRNA, miR-193b, which was significantly down-regulated in melanomas, both primary and metastatic. Over-expression of miR-193b in melanoma cell lines reduced cell proliferation. One target of miR-193b is the cell cycle regulator, cyclin D1. Cyclin D1 expression is increased in melanoma and is directly inhibited by miR-193b. A second target that was described is MCL-1, a protein that blocks apoptosis. The small molecule inhibitor of BCL-2 family members, ABT-737, is able to induce apoptosis of melanoma cell lines when MCL-1 expression is low or is reduced by siRNA treatment. It was found that the expression of miR-193b is able to stimulate apoptosis in combination with ABT-737 treatment, possibly because it down-regulates MCL-1.

Oral Abstracts

Reviewed by Dr. Catherine van Raamsdonk

Dr. Marjan Huizing (National Institutes of Health, Bethesda, MD, USA) presented a talk on “The Genetics of Hermansky-Pudlak Syndrome”. Hermansky-Pudlak syndrome (HPS) is a recessive genetic disease characterized by an absence of platelet dense bodies. There are defects in lysosome-related organelle function, which cause oculocutaneous albinism, bleeding and sometimes colitis or pulmonary fibrosis. The genes that are mutated in eight different human HPS subtypes (HPS1-8) are known. Marjan Huizing’s group has assembled a large cohort of DNA samples from 266 HPS patients at the NIH Clinical Center and has used this resource to determine prognostic information specific to each HPS subtype. 145 of these patients are from Puerto Rico and have an abundance of HPS-3 mutations, due to founder effects. Within the NIH cohort, it was found that individuals with the HPS-1 and HPS-4 subtypes are at increased risk for pulmonary fibrosis and granulomatous colitis. Those with HPS-2 subtype have persistent neutropenia and may develop pulmonary fibrosis, while those with the HPS-3, HPS-5 and HPS-6 subtypes have no pulmonary involvement. The lifespan of those with pulmonary fibrosis is 30-50 years, without a lung transplant. Dr. Huizing estimates that there are around 800 people with HPS worldwide. Interestingly, 16 of the NIH patients had no identifiable mutations in the coding regions of the 8 known HPS genes. This suggests that additional HPS subtypes remain to be discovered, possibly present in only one individual/family, as are HPS-7 and HPS-8.

Dr. Robert Cornell (University of Iowa, IA, USA) presented a talk entitled “Transcription Factor Activator Protein 2 Family Members Promote Zebrafish Melanophore Differentiation”. The goal of the research presented was to determine the developmental role of the activator protein 2 family of transcription factors in melanophores. Two of the tfap2 family of transcription factors are expressed in human melanocytes. In a set of experiments in zebrafish, morpholino knockdown of tfap2e had no effect. Knockdown of tfap2a reduced the number of cells expressing a Mitf-EYFP reporter by ~40%. A double knockdown of tfap2a and tfap2e did not further reduce the number of cells expressing the
reporter, but it did cause these cells to be poorly melanized, with a reduction in \(dct\), \(tyrplb\) and \(tyr\) expression. Expressing \(mitfa\) under a \(sox10\) promoter in the double knockdown embryos caused an increase in the number of melanophores, which were also more strongly pigmented. These results suggest that \(tfap2a\) and \(tfap2e\) have overlapping functions in melanophore melanization and that \(tfap2a/e\) act either upstream or in parallel with \(mitfa\) in zebrafish.

**Reviewed by Dr. Robert Cornell**

**Dr. Ling Hou** (Wenzhou Medical College) presented the lecture entitled “**Allele-specific Interactions between Mitf and Kit in Melanocyte Generation: 2b or not 2b?**”. A well-accepted method to test whether two genes act in a single pathway is to create an animal that is heterozygous mutant for both genes and assess whether the phenotype is more severe than a simple sum of the phenotypes in the single heterozygotes. There is biochemical evidence that ligand binding to the receptor tyrosine kinase Kit results in phosphorylation of specific serine residues in Mitf, modulating its activity. To test whether Kit and Mitf interact in the context of melanocyte development in vivo, Dr. Hou created a mouse doubly heterozygous for a null allele of \(Kit\) and a null allele of \(Mitf\) (Mitf-wh). Such animals exhibited far more extensive white spotting than seen in either heterozygote alone, supporting the biochemical evidence Kit and Mitf interact. Dr. Hou and colleagues next tested whether several other alleles of Mitf would also show a similar interaction with the Kit null allele, and found only one that did so, the Mitf-bws allele. Homozygous Mitf-bws mutants exhibit both a reduction in overall Mitf transcript levels and an altered ratio of Mitf transcripts containing or lacking exon 2b. Interestingly, exon 2b contains one of the serine residues that becomes phosphorylated in response to Kit signaling (via the Map kinase cascade). Interestingly however, targeted alleles of Mitf that reproduce one or the other of these two qualities of the Mitf-bws allele do not show genetic interactions with Kit. The authors concluded that Mitf-bws is a complex allele and that the interaction cannot be readily explained by either the reduced mitf RNA levels or the altered exon 2b splicing alone. They suggest the allele-specific interaction of Kit and Mitf that they have uncovered is a model for allele-specific interactions between different genes in disease states.

**Dr. Dong Lin** (University of British Columbia) presented the lecture entitled “**A Panel of New Patient-Derived Melanoma Xenograft Models**”. Many cancer drug candidates fail in clinical trials for lack of efficacy despite having the ability to destroy cancer cells in vitro, revealing the need for more realistic models in which to test such candidates. One such model is a xenograft, in which human cancer tissue is transplanted into immuno-deficient mice. When such grafts succeed, the tumor retains a histological and molecular profile very similar to that which it exhibits within the patient, which is in stark contrast to the very qualities of tumor tissue in vivo vs. cultured cancer cells in vitro. Xenografts are thus an excellent platform in which to develop novel therapeutic regimens. Dr. Lin summarized work in which various cancer cell types, including melanomas, have been transplanted into immunodeficient mice under the renal capsule, which was found to be advantageous in comparison to the more commonly used sub-cutaneous location. He conducted transplants from seven melanoma patients, and all seven were successfully grafted. He summarized several instances where drugs have been tested for efficacy against cancer cells in a xenograft context. Finally he proposed a fascinating scenario of individualized-medicine in which patient-specific xenografts might be generated and used to optimize a treatment regimen.
AWARDS - THE 16TH ANNUAL MEETING OF THE PANAMERICAN SOCIETY FOR PIGMENT CELL RESEARCH

Five outstanding posters received the distinction of special poster awards:

First place poster award was won by Connie Lin (Johnson & Johnson, USA) for her work on “Cotinus Coggygria Extracts Reduce Pigment Deposition and Enhance the Elastic Fiber Network of the Skin”.

The second place poster award winner was Tim Lee (Simon Fraser University, Canada) for his work on “Do Polychlorinated Biphenyls Cause Melanoma?”

Three presenters won third place awards:

Carmelo Carmona-Rivera for the work on “Elucidation and Restoration of Interaction Between HPS1 and HPS4 to Form the Biogenesis of Lysosome-related Organelles-3 (BLOC-3)”;
Michael Matundan for the work on “Intrinsic Cellular Glucuronidation Mediates Chemoresistance in Melanoma”;
Mugdha Deo for the work on “Effect of Loss of Nf1 on Pigmentation”.

Poster awardees: from right to left: Connie Lin, Tim Lee, Carmelo Carmona-Rivera, Michael Matundan, Mugdha Deo.
Far right: Frank Meyskens (PASPCR President) and far left: Greg Barsh (PASPCR President-elect) who chaired the poster sessions.
Travel Awardees Perspective

We asked the travel awardees to write a short paragraph about their experiences at the Vancouver conference in order to give you a chance to “meet” our future colleagues.

Iraz Toprak Aydin

I recently received my doctoral degree in Dr. Friedrich Beermann’s lab at EPFL, Lausanne, Switzerland and I am currently working as a post-doctoral scientist in the same lab. This was my first PASPCR meeting and it has been a great experience. First of all, I was able to meet many scientists whose work I have been following, and more importantly I had a chance to present my work and discuss my findings. I learned a lot during those 3 days, expanding from a basic science aspect to melanoma and vitiligo therapy. Furthermore I received very valuable advices and recommendations. The friendly and familiar environment of the conference enabled a young researcher like me to directly interact with the experts. I came back to Switzerland with lots of new ideas to work on! I would like to thank everyone who contributed to the meeting, and the organizers for giving me this opportunity.

Linda L. Eastham

Linda is a part-time graduate student in Richard Niles lab at Marshall University, Huntington, WV. Linda’s research is focused on the induction of A-kinase anchoring protein type 12 (AKAP12) by retinoic acid and its role in mediating the effect of retinoic acid on proliferation and differentiation of retinoic acid-sensitive melanoma cells.

I was very excited to have the opportunity to attend and present my research at the 16th Annual PASPCR Meeting in Vancouver, BC, Canada. Vancouver was a beautiful city and I had a great time. I found the talks to be interesting and very informative, helping me to consider how to take my research in new directions. Also, the format for this year’s meeting was very good, encouraging more interaction with poster presenters. I am appreciative that I was chosen as a recipient of a travel award that allowed me to attend this meeting and I hope to continue to attend conferences in the future.

Zorica Janjetovic and Zoran Pavicevic

Attending PASPCR meeting in Vancouver was a great experience for us both personally and professionally. Since last year’s great announcement in Memphis for the upcoming PASPCR meeting in Vancouver, we have worked hard to achieve the best results that could be presented to the research community of PASPCR members. A much anticipated travel award helped this dream come true. We are both Postdoctoral Fellows at the University of Tennessee Health Science Center in Memphis, TN, USA. Working in the field of sciences and having the opportunity to present that work makes our career goals more achievable. This meeting gave us a wonderful opportunity to hear about the current research in our field and to meet fellow pigment cell researchers. Besides the rewarding experience at the conference, we enjoyed our stay in Vancouver personally as well. It was the first trip with our first child. Although less than a year old, our baby Natalia Emily enjoyed being at the conference with us all day long and later, walking down the streets of beautiful Vancouver city downtown tirelessly. We also got the opportunity to see our old friends form Bosnia, Danijela and Srdjan, as well as meet many new friends from all over the world. We are thankful to PASPCR Committee members and especially Dr. A. Slominski for this wonderful opportunity and great experience we had in Vancouver!
Uraiwan Panich

First of all, I’d like to thank the PASPCR Committee members and especially Prof. Slominski for providing this valuable opportunity for scientific interaction and exchange that I experienced at the conference. It was my first time attending a PASPCR meeting and also my first visit in Vancouver. I am working as a young PI at the Department of Pharmacology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand, and have been conducting research in the area of redox biology in skin pigmentation. It was my privilege to present and share my work at this vibrant meeting, giving me an exciting chance to learn about the ongoing pigment cell research with scientific excellence and up-to-date knowledge in this field and to network with fellow researchers and new friends. Receiving this travel award is not only one of my research achievements I dreamed of but also encourages me to work harder in order to discover or develop something that would be medically useful. Participating in this conference is truly my memorable experience. Apart from the academic opportunity, I very much enjoyed my stay and sight-seeing in Vancouver. I hope to regularly attend the PASPCR meetings, a great venue to share exciting new studies and to meet friends and fellow researchers again.

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ANNOUNCEMENT OF THE 21ST IPCC MEETING – BORDEAUX, FRANCE

ipcc2011
SKIN AND OTHER PIGMENT CELLS
BRIDGING CLINICAL MEDICINE & SCIENCE
XX1st International Pigment Cell Conference
BORDEAUX FRANCE 21-24 SEPT 2011, Palais des Congrès

PRELIMINARY PROGRAMME
AND CALL FOR ABSTRACTS
ABSTRACT DEADLINE: 15 MAY 2011 (to be decided)

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International Programme Committee

FROM THE PRESIDENT

Dear Pigment Cell colleagues and friends,

Following the memorable meeting organised by Kowichi Jimbo in Sapporo, Bordeaux will hold on behalf of the ESPCR the next and 21st IPCC.

Our Dermatology department in Bordeaux has a long standing interest in pigment cell research since Prof William Dubreuilh (1957-1965), the first chair of the department, has described the eponymous lentigo maligna and made seminal observations on the role of solar irradiation in skin cancers.

We have planned with the help of local, European and International colleagues an exciting scientific programme and we will assign priority to the latest and hottest topics in abstract selection.

Our beautiful city will provide for sure an enjoyable venue for the conference and we expect you to become more familiar after the IPCC with our world renowned wines and maybe to visit around beautiful South West France.

On behalf of the local organizing committee, I look forward to seeing you in Bordeaux next September.

Alain Taleb
21-24 Sept 2011
Bordeaux France, Palais des Congrès

Scientific Organization & Industry Sponsoring

contact@ipcc2011.org

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Key Dates: June 2010

Abstract Submission and travel grants deadlines:
- May 15, 2011 (no extensions)

Early Registration Deadline:
- July 1st, 2011

Abstract Submission Information

Abstracts must be submitted by 15 May 2010 online via the IPCC 2011 website www.ipcc2011.org

All abstracts will be considered if pertaining to the pigment cell field. An ad hoc selection committee will make the final decision for the incorporation in the programme at plenary, concurrent, satellite, or poster sessions. Instructions for the preparation of abstracts can be found on the meeting website.

Note that all submissions will receive a confirmation e-mail immediately following successful submission. This will be followed by an outcome letter e-mailed before 15 June 2011. When submitting your abstract, please ensure your e-mail address is accurate.

Abstracts will be published in the August issue of Pigment Cell and Melanoma Research and available in print at the meeting with the final programme.

Travel Awards

Grants will be available to travel to the 21st IPCC in Bordeaux. The IFPCS policy is to help based on scientific achievement and age (priority to young active participants under 35), but all applications will be considered. Travel grant recipients will be selected by an ad hoc committee of the IFPCS and will be notified by e-mail by 15 June 2011.

Application deadline is 15 May 2011. Please apply in writing, with a one page CV, application letter and abstract to the following e-mail address: travel@ipcc2011.org

IFPCS travel awards selection committee:
- Kamitsuki (JSPCR), Le Floc'h (PAFPC), Kuniada (JSPCR), Gasset (ESPCR)

Poster Prize

Pierre Fabre laboratories and ESPCR will sponsor 2 or more poster prizes (details to be finalized).

Poster ad hoc committee:
- Nohrger (JSPCR), Gasset (ESPCR), Slominski (PAFPC), Prasad (JSPCR).
**TUESDAY 20**

**EU MELANET WORKSHOP**
13.00 - 17.00
Standardization of melanin chemistry
Chair: M. d’Ischia

**CONSENSUS CONFERENCE**
13.00 - 17.00
Global vitiligo issues
Chairs: Y. Gauthier - A. Taieb - M. Picardo

**PIGMENT CELL DEVELOPMENT**
13.00 - 17.00
IFPCS Development Group

**REGIONAL COUNCIL MEETINGS**
17.00 - 18.00
PASPCR, ESPCR, JSPCR ASPCR

**IFPCS COUNCIL MEETING**
18.30 - 20.00
REGISTRATION OPENS from 16.00 to 20.00
at Palais des Congrès
poster can be mounted for the whole meeting poster prizes on Friday at Gala Dinner

**WEDNESDAY 21**

**OPENING ADDRESSES**
09.30 - 09.00

**SPECIAL LECTURE**
09.00 - 09.20
25 years of ESPCR
J. Borowsky - P. Riley - G. Ghanem

**PLENARY SESSION I**
OPENING LECTURE
09.30 - 10.30
Chairs: M. Ricardo - P. Kumarasinghe - JP. Lacour
Presidential Lecture
09.30
S. Shibahara
Seiji Memorial Lecture (to be announced)
10.00

**PLENARY SESSION II**
11.00 - 13.30
Tracking the precursors/Developmental biology
Chairs: D. Bennett - T. Kunisada - B.W. Werkle-Haller
Guest lecture: Scott E. Frazer (USA)

*in vivo imaging of precursor migration & lineages

**CONCURRENT SESSIONS 1-3**
11.30 - 13.00

**CS1: Developmental biology**
Chairs: D. Bennett, T. Kunisada & B. Werkle-Haller

**CS2: Chemistry and biophysics of melanins**
Chairs: J.C. Garcia Borron - M. Kazuhiisa - J. Simon

**CS3: Difficult to classify hyperpigmentation**
Chairs: D. Panad - Y. Gauthier - B.K. Geh

**LUNCH BREAK AND POSTER VIEWING**

**CONCURRENT SESSIONS 4-8**
14.30 - 16.00

**CS4: Mouse models**
Chairs: L. Montel - L. Kos - S. Nishikawa

**CS5: Chemistry of melamins**
Chairs: A. Napolitano - J. Menter - S. Ito

**CS6: Evolutionary basis of human skin color**
Chairs: C. Le Poole - R. Sturm - E. Healy

**COFFEE BREAK**

**CONCURRENT SESSIONS 7-9**
16.30 - 18.00

**CS7: Non cutaneous melanocytes**
Chairs: L. Lauze - H. Yamamoto - T. Sarna

**CS8: Update on physiology of cutaneous pigmentation**
Chairs: Z. Abdel Malek - S. Moretti - G. Imamura

**CS9: Degranulation update**

**WELCOME RECEPTION, CITY HALL**
### PLEINARY SESSION III

**08.30 - 10.30**

**Stem Cells: facts, fancy, fiction?**
Chairs: C. Goding - V. Hearing - B. Dreno

Guest lecture: BM. Hoffman (USA)

Hair follicle pluripotent stem (HPS) cells for regenerative medicine: an advantageous alternative to ES and iPS cells

Invited / Selected papers

**PLEINARY SESSION IV**

**11.00 - 13.00**

Photoprotection and beyond: from melanomas to melanosomes
Chairs: M. d’Ischia - K. Wakamatsu - T. Passeron

Guest lecture: V. Sundstrom (Sweden)

*Fernobilogy of Photoprotection*

Guest lecture: E. Sprecher (Israel)

*Keratin disorders associated with abnormal pigmentation: clinical and molecular insights*

Invited / Selected papers

### COFFEE BREAK

### LUNCH BREAK AND POSTER VIEWING

### CONCURRENT SESSIONS 10-12

**14.30 - 16.00**

**CS16: Genetics of pigmentation (clinically oriented)**
Chairs: H. Spritz - X. Zhang - M. Saugir

**CS17: Vitiligo: basic science & medical (clinically oriented)**
Chairs: S.K. Ham - T. Abdur - P. Maniag

**CS18: Stress responses**
Chairs: L.F. Xiang - M.L. dell’Anna - A. Mauviel

### COFFEE BREAK

### CONCURRENT SESSIONS 13-15

**16.30 - 18.00**

**CS19: Neuroendocrinology of pigmentation**
Chairs: A. Sigmund - D. Tebin - M. Bahrn

**CS20: Vitiligo: surgical/instrumental (clinically oriented)**
Chairs: N. Rabobee - S. Mulekar - E. Ian

**CS21: Non Mouse animal models**
Chairs: G. Erf - R. Kelsh - MD. Galbert

### REGIONAL SOCIETY ASSEMBLIES

**18.00 - 19.00**

### SPEAKER’S DINNER (PIERRE FABRE)

### PLEINARY SESSIONS V - VI

**08.30 - 12.30**

**Fundamental aspects of the initiation and progression of melanoma (1)**
Chairs: M. Herlyn (USA) - N. M. Hayden (Australia)

Guest lecture: M.B. Kastan (USA)

DNA damage responses: from mechanisms to human disease

Invited / Selected papers

### LUNCH BREAK AND POSTER DISCUSSION

### CONCURRENT SESSIONS 16-18

**14.00 - 15.30**

**CS16: Preclinical and clinical advances in melanoma management (SMR-IFPCS)**
Chairs: to be decided

**CS17: New pathomechanisms in melanoma: redox status, senescence, autophagy**
Chairs: N. Basset-Seguin - to be decided

**CS18: Immune depigmentation in melanoma and vitiligo (clinically oriented)**
Chairs: D. Norris - C. Lebbé - to be decided

### CONCURRENT SESSIONS 19-21

**15.30 - 17.00**

**CS19: Clinical advances in melanoma management (SMR-IPCC)**
Chairs: P. Chapman - R. Kefford - G. Ghanem

**CS20: Congenital melanosis (clinically oriented)**
Chairs: H. Etchevers - to be decided

**CS21: Xenoderma pigmentosum (clinically oriented)**
Chairs: A. Sarrazin - to be decided

### ASSEMBLIES

SMR steering committee / IPCC general Assembly
SATURDAY 24

PLENARY SESSION VII
08.30 - 10.30
Translational research (1)
Chairs: C. Boush - Y. Tomita - M. F. Avril
Guest lecture Y. Hashizaki (Japan)
Next generation Ointments
Invited / Selected papers / Hot topics

COFFEE BREAK

PLENARY SESSION VIII
11.00 - 13.00
Translational research (2)
Chairs: Z. Ronai - H. Yamamoto - F. Tison
Guest lecture: T. Luger (Germany)
MSH and related peptides, beyond pigmentation
Guest lecture: L. Zerba (Italy)
Neuromelanin in brain aging and Parkinson’s disease
Invited / Selected papers / Hot topics

LUNCH BREAK / INDUSTRY SYMPOSIUM

CONCURRENT SESSIONS 22-24 14.30 - 16.00
CS22: Vittluga: Report on Global Issues Consensus
Conference and selected papers
CS23: Albinism: clinically oriented
Basic science and patient-oriented sessions
CS24: Skin depigmenting agents,
from basic mechanisms to application: focus on melasma
Chairs: K. Al-Shamia - R. Nathan - W. Zhu

COFFEE BREAK

CLOSE OF IPCC2011 16.30 - 17.15
Chairs: K. Jimbow - J. Grob - J. P. Ortonne
Fitzpatrick Lecture (to be confirmed) 16.30
Closing remarks and announcements 17.00

REGISTRATION

IPCC

EARLY REGISTRATION UNTIL JULY 1st, 2011:
Members of Regional Societies: 450 € / Non
Member: 600 € / Students: 300 €

LATE AND ON-SITE REGISTRATION:
Members of Regional Societies: 550 € / Non
Member: 700 € / Students: 350 €

ONE DAY REGISTRATION: 200 €

* The registration includes lunch and coffee breaks,
welcome cocktail

ACTIVITIES

SOCIAL PROGRAMME: GALA DINNER: 50 €

EARLY REGISTRATION OPENING

PRACTICAL INFORMATION

CONGRESS VENUE
The IPCC will take place at the new Bordeaux Convention Centre. This beautiful building, combining quality and modern facilities, is ideally situated next to the ring road, close to the city centre and just 10 minutes from Bordeaux-Mérignac International Airport. The Convention Centre provides top level facilities in a superbly designed architectural complex reflected in the waters of the Lac de Bordeaux.

PALAIS DES CONGRÈS
Avenue Jean-Sabriel Domergue
33300 Bordeaux-Lac, FRANCE
Parking for visitors: rue du Cardinal Richaud

ACCOMMODATION
Several 2, 3, 4 and 5 stars hotels are selected by the congress organizers, in the congress area or in the city center.

LOGISTICS
Patricia Chabrat, Amélie Goumondie
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GALA DINNER
The Gala dinner on Thursday evening, will take place at the Château Giscours in Margaux.

POST CONGRESS TOURS
Sunday, 25th September
- Visit of Saint-Emilion
- Boat trip in the Bay of Arcachon
- Visit of « Bordeaux, Port de la Lune »

MORE INFO:
www.ipcc2011.org
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MITF – past, present and future (p 723)
Ze’ev Ronai

Obituary
Estela Medrano, 1943-2010 (p 724)
Zalfa Abdel-Malek and Menashe Bar-Eli

News and Views
‘Going green’ against skin cancer (p 725-726)
Mariam Malik and Stuart Yuspa

Of swords and ploughshares: immunosurveillance and inflammation in melanoma (p 727-728)
Thomas Tüting

Perspectives
The discovery of the microphthalmia locus and its gene, Mitf (p 729-735)
Heinz Arnheiter

Interpretation of complex phenotypes: lessons from the Mitf gene (p 736-740)
Eirikur Steingrimsson

Lighting a path to pigmentation: mechanisms of MITF induction by UV (p 741-745)
Jue J. Liu and David E. Fisher

Cancer stem cells versus phenotype-switching in melanoma (p 746-759)
Keith S. Hoek and Colin R. Goding

Commentary
Oncogenic RAF: a brief history of time (p 760-762)
David Solit and Neal Rosen
Original Articles

Genetic and morphologic features for melanoma classification (p 763-770)

Differential roles of the pRb and Arf/p53 pathways in murine naevus and melanoma genesis (p 771-780)
Blake Ferguson, H. Konrad Muller, Herlina Y. Handoko, Kiarash Khosrotehrani, Friedrich Beermann, Elke Hacker, H. Peter Soyer, Marcus Bosenberg and Graeme J. Walker

p53 prevents progression of nevi to melanoma predominantly through cell cycle regulation (p 781-794)
Tamara Terzian, Enrique C. Torchia, Daisy Dai, Steven E. Robinson, Kazutoshi Murao, Regan A. Stiegmann, Victoria Gonzalez, Glen M. Boyle, Marianne B. Powell, Pamela M. Pollock, Guillermina Lozano, William A. Robinson, Dennis R. Roop and Neil F. Box

Smad7 restricts melanoma invasion by restoring N-cadherin expression and establishing heterotypic cell-cell interactions in vivo (p 795-808)

Downregulation of SIK2 expression promotes the melanogenic program in mice (p 809-819)
Nanao Horike, Ayako Kumagai, Yuko Shimono, Tomoko Onishi, Yumi Itoh, Tsutomu Sasaki, Kazuo Kitagawa, Osamu Hatano, Hiroaki Takagi, Teruo Susumu, Hiroshi Teraoka, Ken-ichi Kusano, Yasuo Nagaoka, Hidehisa Kawahara and Hiroshi Takemori

Short Communications

PLX4032, a potent inhibitor of the B-Raf V600E oncogene, selectively inhibits V600E-positive melanomas (p 820-827)
John T. Lee, Ling Li, Patricia A. Brafford, Marcia Van Den Eijnden, Molly B. Halloran, Katrin Sproesser, Nikolas K. Haass, Keiran S.M. Smalley, James Tsai, Gideon Bollag and Meenhard Herlyn

The aryl hydrocarbon receptor (AHR), a novel regulator of human melanogenesis (p 828-833)
Sandra Luecke, Maria Backlund, Bettina Jux, Charlotte Esser, Jean Krutmann and Agneta Rannug

Profile

Boris Bastian (p 834)
Meenhard Herlyn

Letters to the Editor

Sunscreen prevention of melanoma in man and mouse (p 835-837)
Heather L. P. Klug, Janet A. Tooze, Cari Graff-Cherry, Miriam R. Anver, Frances P. Noonan, Thomas R. Fears, Margaret A. Tucker, Edward C. De Fabo and Glenn Merlino
Melanoma cell-secreted soluble factor that stimulates ubiquitination and degradation of the interferon alpha receptor and attenuates its signaling (p 838-840)
Wei-Chun HuangFu, Juan Qian, Chengbao Liu, Hallgeir Rui and Serge Y. Fuchs

Decreased heme oxygenase-1 expression distinguishes human melanomas from melanocytic nevi (p 841-844)
Sun A Jin, Jae-Jeong Park, Jee-Bum Lee, Seung-Chul Lee and Sook Jung Yun

Quantitative measurement of circulating lymphoid-specific helicase (HELLS) gene transcript: a potential serum biomarker for melanoma metastasis (p 845-848)
Hye-Eun Kim, James T. Symanowski, Erika E. Samlowski, Jason Gonzales and Byungwoo Ryu

Combined mass spectrometry- and immunohistochemistry-based approach to determine protein expression in archival melanoma – proof of principle (p 849-852)

Resources
Mouse melanoma models and cell lines (p 853-859)
William E. Damsky Jr and Marcus Bosenberg

Melanoma Tissue Microarray (TMA) Cohort and Data Repository (p 860)
David L. Rimm

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Japanese Society for Pigment Cell Research (p 861-873)

Melanoma 2010 Congress (p 874-1004)

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PCMR Journal Recent PubCasts

Two new pubcasts have been recently released for Pigment Cell & Melanoma Research (PCMR), the scientific journal associated to IFPCS and SMR:

1. This video refers to the work of Dr. Arup Indra’s laboratory (Oregon State Univ.) on “Loss of nuclear receptor RXR in epidermal keratinocytes promotes the formation of Cdk-4 activated invasive melanomas“, published by Stephen Hyter, Gaurav Bajaj, Xiaobo Liang, Mariano Barbacid, Gitali Ganguli-Indra, Arup Kumar Indra in Pigment Cell & Melanoma Research, 23 (5), 635-648 (2010).

The Pubcast (video) is available at: http://www.scivee.tv/node/19624.


The Pubcast (video) is available at: http://www.scivee.tv/node/25222.
A REMEMBRANCE: ESTELA MEDRANO (1943-2010)
by Dr. Judith Campisi

Judith Campisi, Ph.D., holds joint appointments at the Buck Institute for Age Research, Novato, CA, USA and Lawrence Berkley National Laboratory, Berkeley, CA. She has performed seminal research in the field of aging, senescence and cancer. Estela and Judith first met as postdoctoral fellows in the same laboratory.

The world of pigment researchers – indeed, the world of basic biomedical researchers – lost an extraordinary member in late August, 2010. Estela Medrano died in an automobile accident while returning home from the Biology of Aging Gordon Conference in Europe. Her tragic and unexpected death has left a hole in many important fields, including pigment, aging and cancer research. Her death has also left a hole in many lives – her family, of course, but also a host of friends, colleagues and young scientists who benefited from her mentorship. She was loved and respected by everyone whose life she touched.

Estela was born in Argentina, where she received her early education and earned a Ph.D. in biochemistry in the laboratory of Jose Mordoh at the University of Buenos Aires. Her dissertation research focused on the biosynthesis of phosphatidyl-dCMP, then a relatively newly described precursor to membrane phospholipids. Estela’s doctoral research solidified for her a pattern that marked the remainder of her scientific life – a never-jaded wonder about the complexities of biological systems, a sensitive passion for understanding those complexities, and a remarkable intuition about the behavior of cells. During her years as a student, Estela also mastered that most distinguished of arts – juggling the demands of research with the care and feeding of (eventually) four young children!

Upon completing her doctoral studies, Estela, together with her husband and children, settled in Boston. There, Estela received postdoctoral training at the Dana Farber Institute in the laboratory of Arthur Pardee, a pioneer in many fields, but at the time immersed in understanding cell cycle regulation in normal and transformed cells. In Pardee’s laboratory, Estela’s skills in cell biology blossomed. She made several important discoveries regarding the mechanisms by which cancer cells fail to heed signals that restrain the growth of normal cells. Those who remember her from that time recall Estela, peering into a microscope, getting a “feel” for her cells, which she then coaxed into revealing their secrets.

Estela and her family returned to Argentina, where she established herself as an independent investigator at the prestigious Fundacion Instituto Leloir in Buenos Aires. Her laboratory continued to study mechanisms of growth control in normal and transformed cells, focusing primarily on breast
epithelial cells. And Estela established herself as a gifted cell biologist, despite the worsening economic difficulties faced by Argentina at that time.

When Estela’s husband, Jorge, was offered a job in the US (Dayton), Estela followed and was soon recruited to the Department of Dermatology at the University of Cincinnati Medical School. There, she embraced a new area of cell biology in order to better complement the focus of her new Department. Her work in this area - the biology of melanocytes and melanoma - earned her an international reputation. Among her seminal contributions were establishing conditions to culture normal human melanocytes from adult skin – a holy grail in the field. She was among the first to recognize the unique properties of melanocytes, and her laboratory identified key events in their conversion to melanoma. She embraced molecular techniques to understand the relationships among melanocyte growth, differentiation, pigment production and transformation, and her work provided important insights into all these areas.

In the early 1990s, Estela also became interested in the role of replicative immortality in melanoma progression, and the mechanisms by which normal melanocytes became senescent. Her pioneering work in this area introduced her to aging research, a field in which she rapidly made an impact. In the late 1990s, then, it was not unexpected that she was recruited to prestigious aging center - the Huffington Center on Aging at Baylor College of Medicine. There, her research at the interface of aging and cancer flourished. Her laboratory discovered the essential mechanisms by which the SKI oncoprotein drives melanoma progression, and defined the critical roles of cyclins, cyclin-dependent kinases and cyclin-dependent kinase inhibitors in limiting the proliferation of melanocytes. A decade ago, Estela was among the first investigators in aging research to recognize the importance of epigenetic gene regulation in driving cellular senescence, aging phenotypes and cancer. Her seminal work on the role of histone acetylases and deacetylases in melanocyte senescence and transformation provoked excitement and recognition from diverse scientific research communities.

Consistent with Estela’s deep sense of responsibility and fairness, she was exceedingly generous with her time and expertise, accommodating whenever possible requests for her services on committees, review panels, editorial boards, etc. She directed an NIH training grant at Baylor, where she trained and advised numerous students and postdoctoral fellows. She served on several editorial boards, including those for Aging Cell, Journals of Gerontology, Journal of Investigative Dermatology and Pigment Cell and Melanoma Research, and guest edited a highly acclaimed “Special Issue on Epigenetic Mechanisms of Aging and Age-related Disease” in Experimental Gerontology. She also chaired or organized many symposia at major meetings, including annual meetings of the Gerontological Society of America, International Pigment Cell Conferences, Gordon Research Conferences on the Biology of Aging, and special conferences on melanocyte biology and melanoma. She also served on countless review panels, most recently as member of the NIH Cellular Mechanisms in Aging and Development study section. As the many colleagues who had the pleasure of working with her knew, Estela worked tirelessly, reliably - and always with grace.

Throughout her career, Estela set three priorities from which she never waivered: a passion for curiosity, truth and rigor in her research; a nurturing devotion to her students, fellows and younger colleagues; and unwavering support to her friends and colleagues. Her intelligence, warmth and graciousness permeated every facet of her professional and personal life. Yet - despite Estela’s gentle and open personality - her strength of character was never far from the surface. For the many young scientists she trained, the many colleagues whose lives she touched, and many of us who had the privilege of her friendship, Estela’s death leaves an unfilled hole - in our lives and our science.
LET ME INTRODUCE…

The NIH Pigment Cell Research Special Interest Group: Past, Present and Future
by Dr. Julio C. Valencia and Dr. Vincent J. Hearing

It is ingrained in all living creatures to love light and, indeed, since mankind’s first wanderings from the caves, worship of the sun has been a fundamental tenet that many societies hold even to the present (1). Such appreciation started to focus more in the vivid colors of nature, the pigments. Such innocent and logical interest has evolved to a fierce conundrum of facts and myths that has joined and divided human societies. Here, we will introduce you to a successful story that brought pigmentation to the full forefront in science: the National Institutes of Health (NIH) Pigment Cell Research Special Interest Group. Back in the 1970’s, there were only a few research groups at NIH that were studying pigmentation. One was Marvin Lutzner’s group in the Dermatology Branch who was studying Chediak-Higashi syndrome and using beige mice as a model (and other coat color mutants as controls and experimentals). The other was Dr. Steven Rosenberg’s melanoma research program in the Surgery Branch, and that was about it. However, change was coming. In the mid-1980’s, when Dick King and Jim Nordlund were founding the PASPCR, various Institutes at the NIH began recruiting Principal Investigators (PIs) to study other pigment-related diseases and the critical mass of pigment research at NIH began to coalesce. In 1989, the 2nd Annual Meeting of the PASPCR was held in Bethesda, MD and was cosponsored by NIH. Shortly after those events, NIH began setting up Special Interest Groups that were intended to span the various Institutes here on the NIH Campus to promote interactions between them. There were several broad and classical interest groups, e.g. Cell Biology, Immunology and Genetics; however there was also a building consensus at the NIH community to support smaller, more specific Special Interest Groups with features similar to those mentioned above. It didn’t take much intuition among those new PIs to form the Pigment Cell Research Special Interest Group. Among those new groups are some of the best scientists in our field such as: Heinz Arnheiter (NINDS), William Gahl (NHGRI), Vincent Hearing (NCI), John Hammer (NHLBI), Ken Kraemer (NCI), Glenn Merlino (NCI) and Bill Pavan (NHGRI). The original organizer and chair of that group was Vince Hearing, but after several years in that role, he passed the torch to Bill Pavan, who then passed it later to Tom Hornyak and Marjan Huizing, and now Julio Valencia shares that duty with Tom Hornyak.

During the almost 16 year life of our group, we have become an open and organized forum for scientists and physicians with an interest to investigate the different biological aspects that are involved in pigmentation or allied fields. As of today, our group has over 70 NIH and non-NIH researchers/investigators in the US and throughout the world. We meet once a month for a 2 hr seminar and discussion period, which we have done routinely from the start. We also have occasional 1 day Workshops to practice talks for upcoming Pigment Cell meetings, listen to invited speakers, and develop our strategic plans for the upcoming year. Every day, our goal is to have one voice and a clear path to the dynamic challenges in our field, many of them considered global issues such as the effects of increased risk of ultraviolet radiation exposure. Because of this and other developments, we invite you to know more about our scientific achievements, organization and history or join us by visiting our web page http://www.nih.gov/sigs/sigs.html.

"Darkness is dispelled by shining a light on the problem, not by casting additional darkness on its path." J.J. Dewey

References:
INDUSTRY PERSPECTIVES

by Dr. Gopinathan K. Menon

I was surprised and flattered when Emilia Costin approached me to write a piece for the PASPCR newsletter with an “industry perspective” on pigmentation related research. I consider myself a novice in the pigmentation field, having participated in only a handful of pigmentation meetings, but both the subject and its leading researchers in the field have fascinated me and evoked my envious admiration; and it was with respectful trepidation that I agreed to write for the newsletter; fighting off writer’s block (for which I was chided by no lesser a personality than Dr. Albert Kligman: “Don’t use these sexy terms as excuses for insecurity; get the damn thing done”) and could not meet one deadline for which Emilia graciously excused me.

I have had a long stint in skin biology research, both in Academia (University of Baroda, India, The University of California San Francisco, CA) and in the Industry. At UCSF, I had long focused on the permeability barrier of skin, and had largely ignored the role of skin pigmentation in this crucial function. When I transitioned from academic research to Industry, I was focused on skin care R&D, specifically on skin barrier; but was soon prodded to learn more about pigmentation; which I did rather reluctantly. My employer (Avon Products, Inc.) had a small but dedicated team focused on developing “skin lightening” products for the Asian Market, and the team had invited Dr. Nordlund to deliver talks on the subject. I was fortunate to listen to his talks on a couple of occasions, and work with the Industry scientists who were mainly focused on inhibition of tyrosinase as the primary target of actives. As the research group at Avon expanded with the recruitment of scientists with research backgrounds in pigmentation, my learning curve sharply accelerated. Around this time, the UCSF group, led by Dr. Peter Elias, published a paper stating that pigmentation, and not race or ethnicity is the crucial factor that ensured the superior barrier repair response in human populations (once considered as purely ethnic response) (Reed et al., 1995).

I avidly started reading publications of the leading pigment researchers in Academia (Vince Hearing, Zalfa Abdel Malek, Ray Boissy, John Pawelek, Ashok Chakraborty, Kowichi Jimbow, Seth Orlow) and Industry (Genji Imokawa, Miri Seiberg). Their papers opened me up to a new world of transcription factors, signaling factors, active ingredients that activate or inhibit the various pathways of pigmentation, along with a whole new set of scientific jargon. At Avon, we had the opportunity of inviting some of these leading researchers to our R&D facility for seminars, and in the process, gathered their insights and advice; occasionally experiencing their warm and humorous personalities as well. Through them, I was able to recruit outstanding minds like Emilia Costin and others to our R&D team as well.

Most R&D groups in personal care industry have talented scientists, state of the art laboratory facilities, and ongoing interactions and collaborations with University scientists. The only disadvantage to this world, for burgeoning scientists, may be the inability to publish, as well as interact freely with their academic colleagues - hampered by issues of Intellectual Property and ideation trapped in the red tape of Patenting. Business decisions and market realities may cause abandonment of a project, irrespective of its scientific merits. Unexpected changes in management could see your pet project terminated, or transferred to a different group within, to the utter dismay of an academic whose collaboration and relationship you have nurtured for years. In such cases, your options are limited to complying with the decision, or leaving the employer (unless you are tenacious enough to put the project on hold and hope for a favorable future opportunity). Often, to your utter chagrin, you may see a competitor launching a successful product based on the technology that you championed, but failed to convince the decision-making body at
your organization. Well, I suppose that feeling is not much different than when an academic rival scoops you on a publication, weeks before you submitted that exciting manuscript.

Personally, I found it important to remain a “closet academic” in my research, to some extent due to support from my superiors at work; but largely due to an international academic network of supportive scientists, many of whom were my colleagues in the Elias Lab (UCSF Dermatology), and have since established themselves in their respective countries after their UCSF stints. The California Academy of Sciences, of which I am a Fellow, provided an affiliation and support for continued publication of basic biology research that I could pursue on my own time. Without the pressure of “publish or perish” situation, I could choose to conduct research entirely for pleasure, and many of the insights I gained from such work became useful pointers for work related projects as well. Those who debated me at work on the distinction between “basic research“ and “applied research”, have not changed my view that there is research, and then there is the opportunistic application of the fruits of research for creating a product or technology. While good science may not always be good business, bad science is definitely bad business - and I believe that despite contrary advice that I have received more than once. Why am I bragging about my experiences? Because over the years, many young scientists have asked me for advice on working for the Industry or about leaving the Industry for other options. The grass often appeared greener on the other side to me as well, despite having spent time in both pastures. Still, learning to straddle the world of Academia and Industry, sitting on the fence (not great practice in politics) allows one to see the grass and the weeds on both sides (no comments on which side has more weeds). Science is an art, and not unlike the various mediums of art, it has, often times, a difficult and painful relationship to commerce.

For the last three years, I have been working in a third sector - the supply side of actives for the personal care Industry, with my current employer, International Specialty Products (ISP). ISP leadership, especially Claude Dal Farra, offered me a lot more of the “basic” research opportunities. They have encouraged publication and collaborative research projects. This has allowed me to work with scientists I know well but could not work with in the past (they were from competing personal care companies). It is also exhilarating being on the supply side, with the sheer number of takers for ones ideas and results, as opposed to being at the mercy of a single end-user. Pigmentation is indeed a win-win topic in the business (for every person who seeks a tan, there is another who wants to lighten his/ her skin).

After attending a few sessions on Melanin biology at the SID, and a couple of PASPCR meetings, I am convinced that the molecular biology/ *in vitro* approach unto itself is not the way to investigate pigmentation of human skin. I was fortunate to be introduced to Cellworks, a California based company with R&D footprints in Bangalore, which is developing a transformative technology to prototype drug-disease interaction and identify novel therapies and design combinational therapies for Oncology and Immune Disorders. It is a *virtual functional proteomics* system and quantitative representation of cell systems and co-culture of cell systems which correlates with human physiology and confirmed through prospective experimental correlations. Cellworks curates, assimilates and integrates the world’s proteomics information into this platform, and has created one of the most comprehensive set of validated predictive, functional and dynamic disease models. Dr. Shireen Vali (CSO) and Pradeep Fernandes (CEO) introduced me to the capabilities of their “*in silico*” platform on pigmentation, and I was smitten with the idea of working with them. ISP leadership embraced the idea, and we were off to a flying start. Despite my proud position as a card-carrying member of the League of Computer Illiterates (or semi-literate) in Biology, the technological expertise and enthusiasm of these guys swept off my characteristic resistance to accept the “dry” way of conducting biological research. It took several
demonstrations from CellWorks over the course of a few months, to make me understand the basics of their approach. But they were patient and indulgent with my naiveté; encouraging me to read up on the tenets of Systems Biology approach, and convincing me of the time, energy, and money that could be saved by using their platform.

To make a long story short, using our in vitro data on inhibition of tyrosinase activity, and using UVB exposure model to up-regulate pigmentation in a melanocyte-keratinocyte co culture model, they ran an in silico experiment which predicted the impact on melanin production with different doses of our active. Independent in vitro studies in collaboration with Ashok Chakraborty (Yale University) provided us with data supporting those in silico predictions. Later studies (in vitro and in silico) with two different actives that impacted Tyrosinase, as well as TRP 1 and 2 pointed to some synergy between these actives for skin lightening, which we presented as posters at an SID meeting (Moore et al., 2009). Additionally, at the ISP Center for Skin Biology (Sophia Antipolis, France), we tested the actives on ex vivo human skin, examining melanosomes in epidermal cells with transmission electron microscopy to evaluate the effects of these actives. Positive results from this study were subsequently presented at the European Society for Investigative Dermatology (Menon et al., 2010). Last year, Dr Elias gave me an opportunity to work with him on a paper hypothesizing that barrier requirements influenced the development of pigmentation in humans (Elias et al., 2009). I am looking forward to future studies in collaboration with both our Industrial and Academic partners in this venture, for skin lightening as well as tanning effectors.

To sum up, I have enjoyed my tenure in Academia, as well as Industry, but have especially valued the opportunity to interface with both simultaneously. I have been extremely fortunate to be able to do this, and most of all, to get paid for doing what I love to do. In sharing this bit of personal information, even at the risk of appearing to be bragging, I hope that the freshly minted PhDs are made aware that they do have several career options; and power to make their choices. If they are looking for an Industry position, they could strive for a management position (power) or in the technical ladder (influence); both of which enable them to make an impact, to see a marketed product that people love to use, to have a patent (or a publication) that they could feel proud of. Above all, I’ve realized that a single scientist can make a difference. Yes, you can (and it is not just a slogan).

References:


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Positions Wanted / Available

Postings for Positions Wanted will be open only to members of the PanAmerican Society for Pigment Cell Research (PASPCR) or its sister societies (ASPCR, JSPCR and ESPCR). Postings for Positions Available will be open to all individuals and institutions so long as the position is related to pigment cell research. Please send postings to Bill Oetting at oetti001@umn.edu.

The postings will remain on the Positions Wanted and Available section of the PASPCR Newsletter and on the web page for 1 year, unless other arrangements are made. Please provide an expiration date for any submitted posting if less than 1 year. Final decisions will be made by the Publications Committee of the PASPCR.

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