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.

Preparations for the 19th PASPCR Meeting are far advanced and progressing well. The meeting will be held in Orange, CA, from September 27th to September 30th, 2015, and will be organized by Dr. Frank L. Meyskens, Jr. and Dr. Anand Ganesan. Further information on the meeting will be found on pages 8-11 of this newsletter.

In this issue, we continue the “Let me Introduce…” section with a column by Dr. Catherine Van Raamsdonk, and the “Clinical Insights” section with a column by Dr. John Harris. We brought back the “Hot off the Presses” section in this issue to host a column authored by Drs. Nico Smit, Stan Pavel and Patrick Riley.

We hope you enjoy this issue. We encourage you to send us your comments at our email address pascr.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. In this issue, Dr. Mauro Picardo shares his insights on the World Congress of Dermatology held recently in Canada. Hannah Seberg discusses her impressions on the course and meeting she attended in Reykjavik, Iceland (“From Melanocyte Development to Melanoma Therapies” and “Melanoma: from Basic Science to Clinical Applications”).

If you know of training courses that would be of interest to the PASPCR members, please let us know and we will add them to our Calendar of Events.

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 all our contributors for their columns submitted to us for inclusion in the letters.

PASPCR Newsletter Editorial Team
The PanAmerican Society for Pigment Cell Research

C/O Prashiela Manga, Ph.D.
New York University School of Medicine
The Ronald O. Perelman Department of Dermatology
Smilow Research Center
522 First Avenue, Room 401
New York, NY 10016, U.S.A.

Officers:
Caroline Le Poole
President

Thomas Hornyak
President-elect

Prashiela Manga
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IFPCS Representatives:
Caroline Le Poole (Vice-President)
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Vijayasaradhi Setaluri (Council Member)

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.

Publication Committee

Gertrude-Emilia Costin, Ph.D., M.B.A.
Editor
Institute for In Vitro Sciences, Inc. (IIVS)
30 W. Watkins Mill Road #100
Gaithersburg, MD 20878, U.S.A.
(301) 947-6524
ecostin@iivs.org

Prashiela Manga, Ph.D.
Associate Editor
New York University School of Medicine
The Ronald O. Perelman Department of Dermatology
Smilow Research Center
522 First Avenue, Room 401
New York, NY 10016, U.S.A.
(212) 263-9086
prashiela.manga@nyumc.org

William S. Oetting, Ph.D.
University of Minnesota
Department of Experimental and Clinical Pharmacology
7-115 Weaver-Densford Hall
308 Harvard St. SE
Minneapolis, MN 55455, U.S.A.
(612) 624-1139
oetti001@umn.edu

Andrzej T. Slominski, M.D., Ph.D.
The University of Alabama at Birmingham
Department of Dermatology
1720 2nd Avenue South, VH 476C
Birmingham, AL 35294, U.S.A.
aslominski@uabmc.edu

CALENDAR OF EVENTS

2015
The 7th ASPCR Meeting
Date and place: August 27-30, Shanghai, CHINA
Web-site: http://aspcr.mpco.com.cn

2015
The 19th ESPCR Meeting
Date and place: September 15-18, Edinburgh, Scotland, UK
Web-site: http://www.espcr.org/index3.php

2015
The 19th PASPCR Meeting
Date and place: September 27-30, Orange, CA, USA
Web-site: http://paspcr.org/paspcr2015

2015
The 26th JSPCR Meeting
Date and place: November 14-15, Sapporo, JAPAN
Web-site: http://www.ec-pro.co.jp/jspcr26/

2015
The HUSCRI Skin of Color Symposium
Date and place: November 14-15, Williamsburg, VA, USA
Web-site: http://symposium.huscrit.hamptonu.edu/?dm1

2016
The 20th PASPCR Meeting
Date and place: October 5-8, Baltimore, MD, USA

2017
The XXII IPCC Meeting
Date and place: August 26-30, Denver, CO, USA
MEMBERSHIP UPDATES

Renewals

Vitali Alexeev
Thomas Jefferson University
Philadelphia, PA, USA
E-mail: vitali.alexeev@jefferson.edu

Anand Ganesan
University of California, Irvine
Irvine, CA, USA
E-mail: aganesan@uci.edu

Radomir Slominski
University of Tennessee
Memphis, TN, USA
E-mail: radomir.slominski@gmail.com

New members

Rebecca Bruders
University of Utah
Salt Lake City, UT, USA
E-mail: rebecca.bruders@utah.edu

Sharmeen Chagani
Oregon State University
Corvallis, OR, USA
E-mail: chaganis@onid.orst.edu

Hawasatu Dumbuya
Brown University
Providence, RI, USA
E-mail: hawasatu_dumbuya@brown.edu

Jonathen Eby
Loyola University Chicago
Chicago, IL, USA
E-mail: jeby@luc.edu

Daniel Falcon
University of Arkansas – Fayetteville
Fayetteville, AR, USA
E-mail: dfalcon@email.uark.edu

Mayumi Fujita
University of Colorado ACP
Aurora, CO, USA
Email: mayumi.fujita@ucdenver.edu

Patrick Farmer
Baylor University
Waco, TX, USA
Email: Patrick_farmer@baylor.edu

Erin Wolf Horrell
University of Kentucky
Lexington, KY, USA
E-mail: erin.wolf@uky.edu

Ying Huang
Western University of Health Sciences
Pomona, CA, USA
E-mail: yhuang@western.edu

Marianna O’Sullivan
E-mail: mos.burlington@gmail.com

Michal Sarna
Jagiellonian University
Krakow, Malopolska, Poland
E-mail: m.w.sarna@gmail.com

InSeok Seo
Johnson and Johnson
Skillman, NJ, USA
E-mail: iseo@its.jnj.com

Bishal Tandukar
University of Maryland, Baltimore
Baltimore, MD, USA
E-mail: Bishal@umaryland.edu

Updated contact information

Andrzej Slominski
The University of Alabama at Birmingham
Birmingham, AL, USA
E-mail: aslominski@uabmc.edu
PASPCR PRESIDENT’S CORNER

Dear fellow PASPCR members,

I hope summer is treating you kindly. I’ve just heard that a colleague has earned a brand new grant from NIAMS to study vitiligo and that puts me in a great mood. It is so important to hear that more progress will be made in the field of pigment cell research. So I’ll take this inspirational event to put together a Presidents’ address for the Newsletter about a topic that doesn’t shine quite as bright: Albinism in Africa. Before I head into this, of course I’d like to mention the upcoming vitiligo and pigment cell meetings in Orange, California and ask you to seriously consider submitting an(other) abstract, now that additional slots have opened up. Let’s make sure we fill those slots! Exciting in relationship to today’s topic is also that albinism research will be represented at our PASPCR meeting in Orange this year. I would encourage you to take the opportunity and discuss this research, and perhaps the activities surrounding the first ever International Albinism Awareness Day this past June 13 while you’re there. Note that several of our members, here and among our Sister Societies, have made major contributions to this field or continue to work on albinism. There is even a clinical trial for L-DOPA treatment of OCA (no treatment results posted yet) posted on http://clinicaltrials.gov from the University of Minnesota, known for top-notch albinism research. See also the albinism database linked under our IFPCS website (http://www.ifpcs.org), or scroll through the United Nations messages about Albinism Awareness Day on http://www.un.org.

As a Pigment Cell Society, I hope to encourage our members to share their thoughts on the events that are making headlines in Africa and across the globe that are directly related to the topic of our research. People with albinism are readily recognizable everywhere, and in communities where their skin color stands out most, this is of course especially true. Moreover, eyesight problems put people with albinism at a disadvantage for career development, as classes are difficult to follow. This again is especially true in countries where electronic devices are not readily available to assist in the learning process. Besides these obvious issues, it is clear that people less protected from mutagenic sun rays are at an increased risk for developing skin cancer. One would expect - or at least I would - that where melanocytes are present in the absence of melanin, patients may be at risk for melanoma development and it is certainly intriguing that this is in fact not so. It lends credibility to the concept that melanin may protect, but melanin synthesis is not without risk. This makes for an important topic where sun exposure is greatest, in close proximity to the equator. Whereas each and every one of these factors brings Albinism in Africa within our radius of interest, the real and active, socio-political aspects of daily life as a person with albinism in Africa makes me want to address the topic today and propose to post an article on the science of albinism on our Society website. This is in reference to the killings of affected individuals, an activity that has been taking place across Africa for many years without much interference.

Information referenced here can be found by browsing diverse publications listed on http://www.albinism-in-africa.com and videos that can be viewed on http://www.underthesamesun.com; several articles focus on the situation in Tanzania, which likely reflects where the reports originate rather than where the problem is greatest.

Though the killing of people with albinism is not a new development, and reports date back to at least 2000, the increasingly unsafe environment the senseless act is creating for people with albinism in Africa is a real concern. I’ve read that in Tanzania, less than 10% of killers are being prosecuted, in part because the same people upholding the law are connected with the sale of body parts for around $10K per item. It seems absurd, looking at this from a pigment cell perspective, to find that depigmented body parts make a human being into a walking goldmine. Scanning through articles to make sense of this activity, I am left
with the impression that the movement to kill people with albinism started with witch doctors, consulted by about 90% of Tanzanians if the numbers are correct, having initially spread the word that albinism brings evil to the family whereas raping a person with albinism can cure HIV and the like. These myths are further fed by the notion that the birth of a baby without apparent pigmentation - of course frequently born to parents with no immediate history of albinism in the family - will lead the father to accuse the mother of adultery or explain this seemingly mythical occurrence by a visit from a white (read: European) ghost. Besides the blooming body part industry, such explanations have led family members to kill newborns in an attempt to eliminate the evil. Of course, a commonplace opinion is not anything we can propose to change overnight. But if we keep in mind that a finding reported in articles about the act of killing individuals with albinism is that its acceptance is inversely related to education levels of those interviewed, perhaps we can at least try to do our share to overcome ignorance. Though the aforementioned killings have flown under the radar for quite some time, a resolution reached by the United Nations in 2103 has already done a lot to expose the act of killing people with albinism in Africa. In light of these developments, I would really like to invite anyone with an interest in the topic to help compose a piece that we can post on our website, and perhaps publish or share with other websites if there is an interest. You can also consider attending meetings such as the one planned for late July in Douala, Cameroon and generally lending expertise, taking an interest, and spreading the word. A worthwhile initiative has been developed to distribute free, high SPF sunscreen (see http://albinism.ohchr.org and look for Mafalda Soto Valdes).

Of course I do not mean to say that albinism would affect only those in Africa. Certainly, I have heard of people who have committed suicide ascribed to feeling ostracized by albinism in countries far from the African continent. That does not take away from the fact that discrimination based on skin color has very few positive aspects to it. A difference in skin color is not difficult to see, but discrimination based on differences in skin color: I say, it’s harder than you think.

Respectfully,

Caroline Le Poole, Ph.D.
Professor of Pathology, Microbiology and Immunology
Oncology Research Institute
Loyola University Chicago
PASPCR President

- // -

1st International Albinism Awareness Day

Dear PASPCR members,

On 13 June 2015, the world observed for the first time the International Albinism Awareness Day, established by United Nations. For more information, visit:

https://www.youtube.com/watch?v=TFiXp0fgNWY
https://twitter.com/ungeneva/status/609974638328852480 or #Albinism

The International Federation of Pigment Cell Societies (IFPCS) posted the following material on the website’s blog that we reproduce with permission from the webmaster, Dr. Lluis Montoliu:

Today, 13 June, is the International Albinism Awareness Day, established by United Nations.
People with albinism are visually handicapped and show variable alterations in pigmentation. In our first world, people with albinism can protect their skin from the sun rays, with sun creams, hats and adequate clothes. Unfortunately, in Africa, where usually sunscreens and protective clothes are not universally available, people with albinism suffer from sunburns that often develop into skin tumours and eventually to death, if not treated and removed in time. This is terrible and absolutely unnecessary and could be easily prevented, as it already happens in the first world, where people with albinism can protect their skins from sunlight and can receive support for their visual impairment, which constitutes their most important problem in their everyday’s life.

Furthermore, in some countries in Africa, people with albinism are kidnapped, hunted, killed and cut into pieces, aberrantly and stupidly used in magic rituals associated to a profound ignorance and lack of humane culture, which should be banned, prosecuted, condemned and eradicated.

Today, as the International Albinism Awareness Day, from the International Federation of Pigment Cell Societies, we would wholeheartedly appreciate if everyone of you could dedicate at least some minutes to think about the situation and problems affecting people with albinism all over the world. Joining or supporting any of the many campaigns launched today by the associations in support of people with albinism could be a fantastic first step!

http://www.albinismo.es/
http://www.genespoir.org/
http://www.albinism.org.uk/
http://www.albinism.org/
http://www.albinismus.de/
http://albinismo.it/
http://www.albinismo.eu/
http://worldalbinism.org/
http://www.underthesamesun.com/
http://albinism-in-africa.com/
http://www.albinism.org.za/

… and many more associations and initiatives in support of people with albinism!

The ESPCR supports a conference on oculocutaneous albinism in sub-saharian Africa, which will be held in Douala, Cameroon, on 24-25 July, promoted by Prof. Robert Aquaron (Honorary member of ESPCR) and Prof. Albert Mouelle (Cameroon), where a number of IFPCS members will be there presenting our research projects and scientific progress aiming to better understand albinism.

Thanks for joining and spreading the word!

Tags: Africa, albinism, awareness, United Nations

Posted in Color Genes, ESPCR, IFPCS, albinism, coat color genes, general, pigmentary genes, web | No Comments »

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CORPORATE SPONSORS
by Dr. Prashiela Manga

The PASPCR would like to thank Johnson & Johnson for continued financial support of the Aaron B. Lerner Award in 2015. We also thank Celgene Corporation for their support of the 2015 Annual PASPCR conference.

- // -

ANNUAL CONFERENCE SUPPORTERS
by Dr. Prashiela Manga

The PASPCR would like to thank University of California, Irvine’s School of Medicine, Department of Dermatology, Chao Family Comprehensive Cancer Center, Beckman Laser Institute & Medical Clinic and the Sue & Bill Gross Stem Cell Research Center for financial support of the 2015 PASPCR Annual Conference.
LETTER FROM THE PASPCR SECRETARY/TREASURER

Dear PASPCR Colleagues and Friends,

As we prepare for the next PASPCR annual meeting, I would like to thank Johnson and Johnson for their commitment to our Society-the 2015 Aaron B. Lerner Award will again be sponsored by J&J.

Plans for the annual meeting are being finalized under the leadership of Dr. Frank Meyskens. We are happy to announce that the PASPCR and meeting organizers will be sponsoring 13 travel awards. Congratulations to all the Awardees listed below.

The program for the PASPCR meeting features new and exciting topics- expanding our view of the pigment world- as well as many talks from PASPCR members. There will also be opportunities for students and fellows to interact with faculty members at the “Meet the Experts” sessions. A few deadlines to keep in mind:

- The early registration deadline has been extended to August 15, 2015 so register soon to take advantage of reduced prices.
- The deadline for poster abstracts has also been extended to August 15, 2015, so be sure to submit your latest findings. Although the abstracts will not be published in PCMR, they will be available in the conference booklet.
- Hotel reservations must be made before August 27, 2015 in order to get the conference rates.

See you in California!

Prashiela Manga, Ph.D.

TRAVEL AWARDS

Congratulations to our travel award winners:

Omotayo Arowojolu
Sharmeen Chagani
Hawasatu Dumbuya
Jonathan Eby
Daniel Morales Falcon
John Harris
Sandeep S. Joshi
Javier Pino
Michal Sarna
Radomir Slominski
Bishal Tandukar
Jitender Taneja
Erin Wolf-Horrell

The awards will be sponsored by the PASPCR and through funds raised in support of the 2015 Annual Meeting.

AARON B. LERNER/PASPCR SPECIAL LECTURE

Congratulations to Lionel Larue, PhD who has been selected to present the Aaron B. Lerner Lecture at the 2015 PASPCR Annual Meeting.

Thank you to the Nominations and Selection Committee: Thomas Hornyak (Chair), Zalfa-Abdel Malek, Robert Cornell and Maria Wei - for their efforts in making the selection.

- // -
19th PASPCR MEETING
The Melanocyte and Its Multiple Niches: New Biology in Health and Disease
September 27 – 30, 2015: The Double Tree Hotel Anaheim - Orange, CA
Jointly Provided by:

IFPCS President:
Kyoung Chan Park, ASPCR

IFPCS Vice President:
Caroline Le Poole, PASPCR

IFPCS Secretary / Treasurer
Chikako Nishigori, JSPCR (Secretary)
Lluis Montoliu, ESPCR (Treasurer)

IFPCS Past President and Representative
Mauro Picardo, ESPCR (ex officio, Past IFPCS President)

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Thomas Hornyak, Ph.D.  President-elect
Prashiela Manga, Ph.D.  Secretary/Treasurer
Greg Barsh, M.D., Ph.D.  Immediate Past President
Anand Ganesan M.D., Ph.D.  2015 Co-Chair

Local Organizing Committee (UCI)
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Esteban Dell’Angelicca, Ph.D. (UCLA)
John Fruehauf, M.D.
Kristen Kelly, M.D.
Kenneth Linden, M.D.
Feng Liu-Smith, Ph.D.
Christopher Zachary, M.D. (Baylor)

2015 PASPCR Co-Chairs:
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Anand Ganesan M.D., Ph.D.

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   Beckman Laser Institute & Medical Clinic
   Sue & Bill Gross Stem Cell Research Center
   Johnson & Johnson
   Aaron B. Lerner Lecture
   Celgene Corporation

Deadlines
Early Registration: 15 August 2015
General Abstract Submissions: 15 August 2015 (abstracts will not be published in PCMR, but will be printed in the conference brochure)
Scientific Program

National Institutes of Health
Turning Discovery Into Health

Sunday, September 27, 2015
06:00 – 09:00pm Registration & Reception: Double-Tree Hotel by Hilton, Anaheim, California
07:00pm IFPCS Council Dinner (Invitation only)

Monday, September 28, 2015
07:00 – 08:00am Continental Breakfast
08:00 – 08:10am Conference Keynote Lecture: Amyloid Structural Polymorphisms in Neurodegenerative and Proliferative Disease.
Dr. Charles Glabe, UC Irvine
08:50 – 09:00am Break
09:00 – 11:45am Plenary Session I: The Developmental and Stem Cell Biology of Melanocytes and its Environment. Co-Chairs: Drs. Maria Wei, UC San Francisco; John D’Orazio, University of Kentucky
09:00 – 09:30am Keynote Lecture: Pigment Cell Development and Disease.
Dr. William Pavan, NIH, Maryland
09:30 – 09:50am Invited Lecture: Melanocyte Stem Cell Biology.
Dr. Thomas Hornyak, University of Maryland
09:50 – 10:10am Invited Lecture: Development Pathways that Drive Normal and Malignant Stem Cells.
Dr. Deborah Lang, University of Chicago
10:10 – 11:45am Oral Session I: Competitive Abstracts (6); Co-Chairs TBA
11:45 – 01:00pm Lunch and poster session
11:45 – 01:00pm IFPCS Council Meeting: Sierra Boardroom (Invited only)
01:00 – 05:30pm Plenary Session II: Understanding Internal Melanin, Neuromelanin and the Melanosome. Co-Chairs: Drs. Lidia Kos, Florida International University; Suzie Chen, Rutgers, New Jersey
01:00 – 01:40pm Keynote Lecture: Structure and Role of Neuromelanin in Brain Aging and Parkinson’s Disease.
Dr. Luigi Zecca, National Research Council of Italy
01:40 – 02:05pm Invited Lecture: The role of Endogenous Photosensitizers and Metal Ions in Photoreactivity and Phototoxicity of Retinal Pigment Epithelium Melanin.
Dr. Tad Sarna, Jagiellonian University, Poland
02:05 – 02:30pm Invited Lecture: Endosomal Sorting During Melanogenesis.
Dr. Mickey Marks, University of Pennsylvania
02:30 – 02:55pm Invited Lecture: Links Between Neuromelanin, Dopamine, and Alpha-synuclein in Parkinson’s Disease.
Dr. David Sulzer, Columbia University, New York
02:55 – 03:20pm Panel Discussion I
03:20 – 03:30pm Break
03:30 – 04:30pm Oral Session 2: Competitive abstracts (4); Co-Chairs - TBA
04:30 – 05:30pm “Highlights From Other Regional Societies” Council Member Presentations:
1) Dr. Kyoung-Chan Park (ASPCR): New Aspects of Melasma and Emerging Treatment Strategy
2) Dr. Ian Jackson (ESPCR): A Simple Mechanism of Melanoblast Colonization Reconciles Diverse Pigmentation Patterns
3) Dr. Lluis Montoliu (ESPCR): Functional Evaluation of Mouse Tyrosinase Gene Regulatory Elements Using CRISPR-Cas9 Genome-editing Tools
4) Dr. Chikako Nishigori (JSPCR): Cytotoxicity of 4-(4-Hydroxyphenyl)-2-butanol (rhododendrol, RD) to the Melanocytes is Enhanced by UVB Exposure
05:30 – 07:00pm Poster Session Discussion (with wine & cheese)
07:00pm Reception and Gala Dinner with Musical Accompaniment
### Tuesday, September 29, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>07:00 – 08:00am</td>
<td>Breakfast</td>
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<tr>
<td>08:00 – 09:00am</td>
<td>Meet the Experts: Challenges &amp; Opportunities in Pigment Cell Research (Q&amp;A session for grad students, postdocs and young investigators &amp; Disparities Mentorship). Coordinators: Dr. Esteban Dell’Angelica, UC Los Angeles, Zalfa Abdel-Malek, University of Cincinnati, Ohio and Anand Ganesan, UC Irvine</td>
</tr>
<tr>
<td>09:00 – 12:00pm</td>
<td>Plenary Session III: Canonical UV and Non-UV Pathways in Melanocytes and Melanoma. Co-Chairs: Dr. Julio Valencia, Cancer Research Center, NCI; Dr. Sergio Coelho, Interdisciplinary Scientist, F.D.A.</td>
</tr>
<tr>
<td>09:00 – 09:45am</td>
<td>Keynote Lecture: Paracrine Factors to the Rescue: Controlling Damage of Melanocytes by UV. Dr. Zalfa Abdel-Malek, University of Cincinnati, Ohio</td>
</tr>
<tr>
<td>09:45 – 10:15am</td>
<td>Invited Lecture: Neuroendocrinology of the Skin. Dr. Andrzei Slominski, University of Alabama and VA Medical Center at Birmingham</td>
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<tr>
<td>10:15 – 10:45am</td>
<td>Invited Lecture: Transcriptional Regulation in Human Pigmentation: Biology of Freckling, Ephelides and Solar Lentigines. Dr. Eirikur Steingrimsson, University of Iceland</td>
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<tr>
<td>10:45 – 11:15am</td>
<td>Hot Topic: Chemiexcitation of Melanin: a New Mode of Pathogenesis. Dr. Douglas Brash</td>
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<td>11:15 – 12:30pm</td>
<td>Oral Session 3: Competitive Abstracts (5); Co-Chairs - TBA</td>
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<tr>
<td>12:15 – 01:30pm</td>
<td>Lunch and Open Poster Session</td>
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<td>12:30 – 01:30pm</td>
<td>PASPCR Council Meeting: Sierra Boardroom (Invited Only)</td>
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<tr>
<td>01:30 – 04:30pm</td>
<td>Plenary Session IV: Advances in Diagnostics: Imaging and Genomics. Co-Chairs: Dr. Ivana de la Serna, University of Toledo, Ohio; Dr. Tamara Terzian, University of Colorado Denver Anschutz Medical Campus</td>
</tr>
<tr>
<td>01:30 – 02:00pm</td>
<td>Keynote Lecture: Advanced Imaging of Cutaneous Lesions. Dr. Bruce Tromberg, Director, UC Irvine Beckman Laser Institute &amp; Medical Clinic</td>
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<tr>
<td>02:00 – 02:20pm</td>
<td>Invited Lecture: Using Next Generation Sequencing in the Pathogenesis of Melanoma. Dr. Roger Lo, University of California, Los Angeles</td>
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<td>02:20 – 02:45pm</td>
<td>Panel Discussion II</td>
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<tr>
<td>02:45 – 03:00pm</td>
<td>Break</td>
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<tr>
<td>03:00 – 04:30pm</td>
<td>Oral Session 4: Competitive Abstracts (6); Co-Chairs - TBA</td>
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<tr>
<td>04:30 – 05:30pm</td>
<td>2015 Aaron B Lerner Award Lecture: Dr. Lionel Larue (Introduced by PASPCR President, Dr. Caroline Le Poole)</td>
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<tr>
<td>05:30 – 06:00pm</td>
<td>PASPCR Assembly (discussion and Medrano Award)</td>
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<tr>
<td>05:30 – 07:00pm</td>
<td>Reception and Poster Session/Discussion</td>
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<tr>
<td>07:00pm</td>
<td>Dinner on-your-own</td>
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### Wednesday, September 30, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>07:00 – 08:00am</td>
<td>Continental Breakfast</td>
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<tr>
<td>08:00 – 12:00pm</td>
<td>Plenary Session V: New Directions in the Management of Melanoma. Co-Chairs: Drs. Alexander Boiko, UC Irvine; Sancy Leachman, Oregon Health Sciences University; Feng Liu-Smith, UC Irvine</td>
</tr>
<tr>
<td>08:00 – 08:30am</td>
<td>Chairman’s Lecture: Alternative Considerations in Thinking About Risk Factors and Drug Resistance. Dr. Frank L. Meyskens, UC Irvine</td>
</tr>
<tr>
<td>08:30 – 08:55am</td>
<td>Invited Lecture: Defining a Role for Angiogenesis in the New Therapeutics. Dr. John Fruehauf, UC Irvine</td>
</tr>
<tr>
<td>08:55 – 09:25am</td>
<td>Invited Lecture: Hair Follicles &amp; the Stem Cell Niche. Dr. Maksim Plikus, UC Irvine</td>
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<tr>
<td>09:25 – 09:50am</td>
<td>Special Invited Lecture: Cancer Metabolism and Melanoma. Dr. Fabian Filipp, University of California, Merced</td>
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<td>09:50 – 10:00am</td>
<td>Break</td>
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<tr>
<td>10:05 – 12:00am</td>
<td>Oral Session 5: Competitive Abstracts (6); Co-Chairs - TBA</td>
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<td>12:00 – 01:00pm</td>
<td>Lunch &amp; Departure</td>
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A vitiligo meeting will be held in the Doubletree PASPCR conference hotel in Orange, CA on Sunday, September 27, immediately preceding this year’s annual meeting. The purpose of this meeting is to convey the state of art in the diagnosis and treatment of vitiligo, provide resources to support patients and present a summary of new research that may lead to future treatments. A meeting program has been proposed by our scientific program coordinator Dr. Amit Pandya, with information about vitiligo to be shared among patients, physicians and researchers. The conference organizing team is looking forward to a lively meeting, which will be preceded by a faculty get-together generously hosted by Dr. Pearl Grimes on Saturday afternoon 3-5 PM, with transportation to and from the hotel. Patients will certainly appreciate your attendance at the pre-meeting social starting at 7 PM at Dave and Busters on Saturday evening as well; the restaurant is located in the mall at walking distance from the conference hotel. Please register (no vitiligo meeting registration payment is required for presenting faculty) at www.paspcr.org. The sharp pricing for hotel accommodation that was put in place for the annual meeting has been extended to include the vitiligo pre-meeting. We welcome additional abstracts until through August 15, yet pending further changes the vitiligo meeting program for 9/27 is as follows.

**Recent advances in vitiligo research and care**

9:00 AM  Dr. J.E. Harris, University of Massachusetts Department of Medicine, Worcester MA:  
*Vitiligo: what does it look like, what is it really, and what are your options?*

9:30 AM  Dr. P.E. Grimes, Vitiligo & Pigmentation Institute of Southern California, Los Angeles, CA:  
*Management of vitiligo in children*

9:50 AM  Dr. A.G. Pandya, University of Texas Southwestern, Dallas TX  
*Cost and insurance coverage for treatment*

10:10 AM  Coffee break with poster presentations

10:40 AM  Dr. I.C. Le Poole, Loyola University Chicago, IL  
*Testing HSP70i_Q435A treatment in a model of vitiligo and melanoma*

11:00 AM  Dr. R.A. Spritz, University of Colorado, Denver CO  
*Genome-wide association studies of vitiligo implicate 100 loci in disease risk*
Recent advances in vitiligo research and care (cont)…

11:20 AM Poster discussions

12:00 noon Lunch

1-2 PM Open microphone panel discussion with moderators A.G. Pandya, MD (UT Southwestern) and J. Gardner (Vitiligo Support International).
Panelists include Drs. Ganesan, Manga, Taneja, Park, Overbeck, Birlea, Webb, Le Poole, Spritz, Grimes and Harris.

Posters

P. Manga PhD et al., New York University, New York NY
Cellular stress and the onset of vitiligo

J. Taneja MD et al., Safdarjung Hospital, New Delhi, India
Homocysteine levels correlated to severity of vitiligo and NBUVB phototherapy

K.C. Park MD et al., Seoul National University Bundang Hospital, Korea
Nutritional therapy for vitiligo

A. Overbeck MD, Lumiderm, Madrid, Spain
Stimulated punch grafts: a novel approach for segmental vitiligo & optimizing UVB therapy in vitiligo

S.A. Birlea MD et al., University of Colorado, Aurora, CO, USA
Proliferation, migration and cell death processes are significantly modulated by narrow-band UVB in the hair follicle bulge of vitiligo patients

K.C. Webb MD et al., Loyola University Chicago, IL, USA
TNF-α inhibition to stabilize disease and set the stage for repigmentation in progressive vitiligo

I.C. Le Poole PhD et al., Loyola University Chicago, IL, USA
Vitiligo patients experience increased perceived stress

All pigment cell researchers with an interest in the topic are invited to join us for the inaugural meeting of the Vitiligo Working Group, Basic Sciences Subcommittee, sandwiched between the Vitiligo meeting and the PASPCR Annual meeting at 2-4 PM on Sunday afternoon.

For more information, visit: http://paspcr.org/paspcr2015/vitiligo-pre-meeting.php
MEETINGS UPDATES AND ANNOUNCEMENTS

UPCOMING PASPCR MEETINGS:

THE 20th PASPCR MEETING

October 5-8, 2016
Baltimore, MD, USA

The XXII INTERNATIONAL PIGMENT CELL CONFERENCE

August 26-30, 2016
Denver, Colorado, USA

UPCOMING PIGMENT MEETINGS:

7th ASPCR Meeting, 27th – 30th August 2015, Shanghai, China

Letter from the Organizers

It is a great pleasure to invite all of you to the regional conference entitled “The 7th Annual Meeting of The Asian Society For Pigment Cell Research”. The conference is Organized by the Asian Society For Pigment Cell Research, China International Exchange and Promotive Association for Medical and Health Care. The conference is supported by Huashan Hospital Fudan University, Hangzhou No. 3 People’s Hospital, and China Integrated Medicine Society for Pigmentary Skin Disorders. The 7th ASPCR will be held at Equatorial Hotel, Shanghai, China, during August 27-30, 2015. The meeting will focus on the basic research of pigment cell, the pathogenesis of pigmentary skin diseases, clinical treatment and new technology applied in the clinic.

Look forward to welcoming you in Shanghai!

For more information, visit: http://aspcr.mpco.com.cn/
Letter from the Organizers

Welcome to Edinburgh 2015!

On behalf of the European Society for Pigment Cell Research we would like to welcome you to Edinburgh from September 15th to 18th for the 2015 ESPCR conference. Edinburgh, the capital of Scotland, is a beautiful city with a dynamic culture. Edinburgh University, founded in 1583, is one of the leading research universities in Europe and will host the conference in its modern conference centre situated below Arthur’s Seat, an ancient volcanic hill. Pigment cell research spans a wide range of disciplines, from genetics and genomics, cell and molecular biology, clinical and cancer research to chemistry and physics. We welcome all who are working on melanocytes and melanoma cells from whatever angle. There will be an opportunity to present your work by oral or poster presentations, participate in discussions and hear keynote talks by some of the leaders in the field. Finally we will celebrate with dinner in the Library Hall of Old College, designed by William Playfair and one of the finest public rooms in Scotland.

We look forward to seeing you in September in Edinburgh!

Ian Jackson, President, ESPCR
Liz Patton, ESPCR Board

For more information, visit: http://espcr2015.org/
Letter from the Organizers

Hampton University Skin of Color Research Institute (HUSCRI) invites you to attend its Skin of Color Symposium 2015: From Bench to Bedside on November 14-15, 2015. HUSCRI is pleased to host the fourth event in its series of biennial educational meetings in partnership with the Department of Dermatology at Eastern Virginia Medical School. This CME activity is designed to provide a forum for exchanging the latest research and clinical advances on skin conditions that disproportionately impact minority populations. This educational event is designed to give dermatologists and scientists an overview of the latest information on new clinical applications and basic science research related to caring for patients with skin of color. Program Chairs Dr. Valerie Harvey, Dr. David McDaniel, Dr. Amit Pandya and Dr. Meena Katdare have assembled an esteemed group of clinicians and researchers who will address the latest research and treatment advances in various dermatologic conditions affecting patients with skin of color including pigment disorders, keloids, scarring alopecia, cutaneous lupus, and vitiligo. Other Symposium headliners include Young Investigator and Poster Sessions, along with a Grant-Writing Workshop geared specifically towards individuals from groups underrepresented in the biomedical sciences. Join more than 150 colleagues for this premier event where you will have the opportunity to learn and network, and help impact significant developments in the field while enjoying beautiful, historic Williamsburg, VA.

For more information, visit http://symposium.huscri.hamptonu.edu/?dm1
MEETINGS IMPRESSIONS

World Congress of Dermatology
by Dr. Mauro Picardo

The World Congress of Dermatology (WCD) gathers many people from all over the world. The 2015 meeting was held in Vancouver, and benefitted from nice surroundings, good organization and weather. In this meeting particular attention was given to pigmentary disorders. One of the Keynote lectures during the Plenary Session focused on vitiligo and was brilliantly delivered by Dr. Flora Xiang. I do not recall this taking place in the past. General dermatological recognition was given to the progress made during the past years particularly in the pathogenesis of vitiligo, which represents a challenge for future therapeutic development.

The International Federation for Pigment Cell Societies (IFPCS) had the chance to organize a “Vitiligo Day” that took place at the beginning of the WCD and gave us the opportunity to meet most of the people interested in vitiligo and to proceed with our efforts to define the disease and the relevant outcome measures of therapies.

During the meeting, some interesting symposia were dedicated to pigmentary disorders, vitiligo, hyperpigmentary disorders, etc.; one symposium was specifically focused on new surgical approaches and relevant attention was given to new emerging therapies for melanoma. This is certainly one of the major breakthroughs of the last years. I believe that the Pigmentary Cell Societies had a relevant role in reaching this success that is a result of cultural growth reached during our meetings.

Some consideration should be given to the meaning and role of this big event. The primary aim is to update mainly practical dermatologists that are not necessarily linked to an academic structure— that is of course a relevant aspect in the continuous medical education process. However a major question is how many of these big events do we need and how frequently should they be held to ensure a true educational event and not an expo? We have annual meetings such as AAD, EADV and International Society of Dermatology that basically have the same scope. Which differences can be identified? The meeting structure and organization should be reconsidered. I hope to have the opportunity to provide some suggestions, in order to have more “World Meetings” and less “Expos” for the next meeting that will be held in Milan in 2019.

Dott Mauro Picardo
Direttore Fisiopatologia Cutanea e Centro di Metabolomica
Istituto Dermatologico San Gallicano IRCCS
Via Elio Chianesi 53
00144 Roma
tel +390652666257, fax +390652666247

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1st International Workshop on Oculocutaneous Albinism in Sub-Saharan Africa

A meeting report, compiled by Dr. Lluis Montoliu is available on the ESPCR website at:
http://www.espcr.org/blog/?p=307
I would like to start by thanking PASPCR for the generous travel award that made it possible for me to attend this course and conference. The trip was a wonderful experience all around, and I feel very fortunate to have had this opportunity as a graduate student.

The three-day course “From Melanocyte Development to Melanoma Therapies” began with the students giving short presentations about our own research projects, which included topics ranging from melanocyte gene regulation to interactions within signaling pathways to drug studies. Then, over the next two days, we had the privilege of learning about melanocytes, melanoma, and current therapies from leaders in the field. As my research in Dr. Rob Cornell’s lab focuses on the gene regulatory networks involved in melanocyte differentiation, the lectures on development and gene expression were most relevant to my interests. These included Dr. Lukas Sommer’s talk on the development of melanocyte precursors from a multipotent neural crest cell population and a talk from Dr. Liz Patton on the zebrafish melanoma model. Both Dr. Irwin Davidson and Dr. Colin Goding highlighted the interesting idea of phenotype switching in melanoma and efforts to identify gene expression changes or other factors that enable tumor cells to switch from proliferating to invasive. I also appreciated learning about less familiar areas of melanocyte and melanoma research, and I found the talks on pathology and current therapeutic strategies for melanoma very informative.
One of my favorite things about this course was having opportunities for all of us students to get to know not only each other, but also the teachers. Every evening we had a group dinner at a different venue in the city center, and the atmosphere was very friendly and encouraging. I was excited to meet several scientists with whom our lab has collaborated and to make so many new connections. The final session of the course also included a helpful segment on career development, during which Dr. Heinz Arnheiter and Dr. Colin Goding shared some great resources and advice on preparing for a career in science.

After the course concluded, we all attended the meeting “Melanoma: From Basic Science to Clinical Applications” at the amazing Harpa concert hall. The conference started with an entertaining keynote presentation from Dr. Kári Stefánsson of DeCODE Genetics and continued with many interesting talks on everything from melanocyte development to pathology and the future of clinical therapies. I particularly enjoyed some of the talks on the role of chromatin architecture and epigenetics in melanocytes and melanoma. Dr. Robert Ballotti spoke about differences in the epigenetic marks of Low-MITF vs High-MITF melanoma cells, Dr. Irwin Davidson’s talk focused on the remodelling complexes PBAF and NURF and their essential interactions with MITF during melanocyte development, and Dr. Léon van Kempen presented on the protumorigenic effect of CTCF-Like (BORIS) causing gene expression changes through chromatin looping. During the session on melanocyte development, I had the chance to present my work on the role of TFAP2A regulating melanocyte differentiation genes. This was an extremely beneficial experience for me, as it allowed me to introduce myself to the melanocyte and melanoma community and opened up conversations that led to valuable feedback on my project.

Dr. Eiríkur Steingrímsson, Dr. Lionel Larue, and the other organizers of the course and meeting did a wonderful job with every aspect, and all of the great scientific discussions were nicely complemented by the beautiful and unique city of Reykjavik. Having arrived in Iceland on the summer solstice, I was in awe of the continuous daylight and the gorgeous midnight sunsets. On the last evening of the conference, I participated in the organized trip to the Blue Lagoon geothermal spa, which was a fun way to relax after a long week. I am incredibly grateful to have had the opportunity to visit Iceland, meet and learn from so many inspiring people, and share my research, and I look forward to continuing my graduate career in the melanocyte and melanoma field.

Hannah Seberg B.S.
University of Iowa
Department of Genetics/Anatomy and Cell Biology
1-400 Bowen Science Building, 51 Newton Road
Iowa City, IA 52242 U.S.A.
E-mail: hannah-seberg@uiowa.edu
In this issue, we continue the “Let me Introduce…” section with a column by Dr. Catherine van Raamsdonk, and the “Clinical Insights” section with a column by Dr. John Harris. Back by opportunity and request, is the “Hot off the Presses” section that in this number hosts a column authored by Drs. Nico Smit, Stan Pavel and Patrick Riley.

We hope that you will be inspired to take the opportunity to fill us in on what is happening in your lab or company. Volunteers would be greatly appreciated, just email us at paspcr.newsletters@gmail.com.

This initiative is part of our effort to keep the pigmentation community connected and to emphasize the importance of collaboration and communication between groups. We will keep adding stars on our world map below each time you contribute a column about your newest research projects. So, let’s go on a global research adventure!
LET ME INTRODUCE...

by Dr. Catherine van Raamsdonk

I am an Associate Professor at the University of British Columbia in Vancouver, Canada. I did my graduate work at Princeton University under the supervision of Dr. Shirley Tilghman, who went on to become Princeton’s first woman president. Then I did a postdoctoral fellowship with Dr. Gregory Barsh at Stanford University. These two labs took different approaches to mouse genetics, giving me a very solid background.

I got hooked on pigmentation genetics because of its precision. Pigmentation is right there on the surface, a beautiful read-out of minutia happening on the molecular level. Also, I enjoy cloning mutants. I like the element of surprise. I set up my own lab in 2006, and since then, we’ve used forward genetics to clone several mouse pigmentation mutants, one with freckles, one with a white tail ring, and one that reactivates silenced Agouti expression, supplying a diversity of interesting things to think about. However, the most important project that I have worked on began when I was a post-doctoral fellow. Greg, Karen Fitch, Kelly McGowan and I were studying a collection of dominant mouse mutants with darker skin. Among the collection were two mutants that were virtually identical, yet mapped to different chromosomes. Two closely related G protein alpha subunits were located squarely within each interval, yet it seemed hard to believe that mutations in these ubiquitously expressed and fundamental genes would only affect pigmentation. However, that was the case. It turns out that various single amino acid substitutions in Gnaq and Gna11 cause darker skin, without altering much else about the animal. Furthermore, only the dermis of these mutants is darker, not the epidermis.

After a fortuitous encounter with Dr. Boris Bastian at a PASPCR meeting in Cape Cod, I started searching for mutations in GNAQ and GNA11 in a variety of human cutaneous melanoma and nevus samples, collected and prepared by the Bastian lab. The motivation for this work was that there were increased numbers of melanocytes in Gnaq and Gna11 mutant mice and that a related gene, GNAS, was known to be mutated in pituitary and thyroid cancers. When I got the sequencing reads back from the blue nevus samples, I couldn’t believe my eyes. Many of them possessed a somatic mutation in GNAQ at exactly the same amino acid, Q209. This amino acid is required for the GTPase activity of GNAQ, and its replacement renders the protein constitutively active. Blue nevi, almost always benign lesions, are located solely in the dermis, so this pattern fit well with what we had seen in the mice, although the mouse mutations were not at Q209. We began to test GNAQQ209L as an oncogene using in vitro methods.

After a while, Boris had the inspiration to study uveal melanoma, a rare but devastating type of cancer that develops from the melanocytes in the eye. Being a dermatologist, Boris had not studied ocular melanoma before, but his instincts were correct. Half of the uveal melanoma samples he acquired had a mutation in GNAQ at Q209. The in vitro studies showed that GNAQQ209L transformed cells, promoted cell growth, generated subcutaneous tumors in nude mice, and activated the Map Kinase pathway. We could not explain why GNAQ mutations were found in two different lesions with opposite prognoses, but we published our findings, which were important because the oncogenic events in uveal melanoma were unknown.

I must now admit something embarrassing, and that is that I didn’t sequence GNA11 in the uveal melanoma samples when I sequenced GNAQ. I had stopped thinking about the possibility of GNA11, back when there were no mutations in the blue nevi samples. However, it started to bother me that GNA11 had not behaved the same way as GNAQ, and I wondered if I had somehow missed the GNA11 mutations, perhaps because GNA11 lies within a copy number variable region. I went back to the left over blue nevus samples in the freezer and sequenced individual clones of amplified GNA11 exon 5 and one of the samples generated GNA11Q209L mutant clones. The Bastian lab took over the sequencing, now in a large scale format, and the result was that 6% of the blue nevi and 37% of the uveal melanomas carried a GNA11 mutation. The mutations in GNAQ and GNA11
were mutually exclusive and present in a total of 64% of blue nevi and 83% of uveal melanomas, indicating that Gq/11 activation is a very common pathway for uveal melanomagenesis.

I continued to wonder how mutations in GNAQ could be found in both benign nevi and malignant melanomas. Furthermore, why were the mutations so rare in lesions in the epithelium? Were the melanocytes in the epithelium resistant to GNAQQ209L in some fashion? Perhaps GNAQ was not even expressed or activated in these cells. To find out, we created a mouse that expressed GNAQQ209L conditionally under the control of the ubiquitous Rosa26 locus to force expression of constitutively active GNAQ. This normalized GNAQQ209L expression levels among different melanocytes and prevented endogenous feedback loops that might repress expression. When Mitf-cre, developed by the Barsh lab, was used to initiate GNAQQ209L expression, 100% of the mice developed uveal melanoma within 3 months. The lesions were very aggressive, extending outside of the eye, invading local blood vessels, and metastasizing to the lungs. In the dermis, there was extensive hyperpigmentation, yet only three of the mice in our colony developed a blue nevus. In the epidermis, melanocytes disappeared. These findings finally resolved for me what the Gnaq and Gna11 data had been hinting at for so long. Melanocytes are not interchangeable. Those in the dermis and eye and epidermis have a completely different response downstream of GNAQQ209L. They could possibly regulate many signaling pathways differentially. This has important implications for the treatment of melanoma.

Although historically, mouse pigmentation researchers have focused on the hair, the skin appears to be the origin of the majority of pigment cell related ailments in humans, and I excitedly await more data from our field that will define the properties of all melanocytes: follicular, dermal, epidermal, ocular, otic, and leptomeningeal.

Select publications:


Contact:
Catherine van Raamsdonk, Ph.D.
University of British Columbia
Department of Medical Genetics
2350 Health Science Center Mall
Vancouver BC V6T123 Canada
E-mail: cvr@mail.ubc.ca
CLINICAL INSIGHTS

by Dr. John Harris

Translational research in vitiligo: Launching an era of targeted treatment

Vitiligo is a common autoimmune disease of the skin that results in the destruction of melanocytes and the appearance of white spots (Figure 1). Many are devastated by this clearly visible change in their appearance and seek treatment at the dermatologist’s office. Yet other than monobenzone cream, which depigments the skin further to achieve an even tone, there are no FDA-approved treatments for vitiligo. Available treatments are used off-label and have limited-moderate efficacy.

Figure 1. Vitiligo, characterized by white macules and patches on the skin.

I once had a dark-skinned patient present to our Vitiligo Clinic with widespread depigmentation from vitiligo. Coincidentally, he had recently received a kidney transplant, and was systemically immunosuppressed to prevent rejection. We started narrow-band UVB (nbUVB), and he repigmented faster than any other patient I had seen. Another patient came to the clinic with a severe form of vitiligo, called Vogt-Koyanagi-Harada Syndrome, where skin depigmentation is accompanied by hair depigmentation as well as eye and brain inflammation, presumably due to loss of immune privilege at those cites. They require systemic immunosuppression to prevent blindness, and his uveitis was well-controlled with a prednisone taper. At a high dose of prednisone, he rapidly repigmented his skin, but then lost his repigmentation as we tapered the dose.

Thus, it appeared that immunosuppression could be a highly effective form of therapy for vitiligo, however the risks of conventional, non-targeted immunosuppression like systemic tacrolimus and prednisone are too great for use in most patients. We therefore hypothesized that targeted immunosuppression might be a safe and effective approach to developing new treatments, similar to the recent revolution we’ve seen for the treatment of psoriasis, by neutralizing cytokines central to its pathogenesis (i.e., TNF-α, IL-23, and IL-17). However while TNF-α antibodies are highly effective for psoriasis, they have proven ineffective to treat vitiligo, suggesting that a different cytokine pathway drives vitiligo than drives psoriasis. In support of this, characteristic signs of TNF-α-induced inflammation seen in psoriatic skin (erythema, edema, and scale) are absent in vitiligo.

We (see our group pictured in Figure 2) therefore sought to identify the cytokines that drive immune responses in vitiligo and lead to depigmentation, with the hope that they could be uniquely targeted as a new strategy to treat vitiligo. We performed gene expression profiling on lesional skin from vitiligo patients and a new mouse model of vitiligo that we had developed, and discovered a distinct IFN-γ signature, without evidence of other cytokine involvement, including IL-17, IL-23, IL-4, IL-13, or even IFN-α or IFN-β (Rashighi et al., 2014). In our mouse model, we found that blocking IFN-γ or using IFN-γ receptor-deficient hosts prevented vitiligo [(Harris et al., 2012) and unpublished observations]. Based on these observations, we have focused on better understanding the role of the IFN-γ pathway in driving vitiligo pathogenesis, as well as how to specifically target the pathway to develop new treatments.
Next, we wanted to identify the downstream IFN-γ-induced events that lead to depigmentation in vitiligo, in order to provide additional treatment targets. In earlier studies in our mouse model, we found that blocking IFN-γ resulted in defective homing of autoreactive T cells to the skin, despite normal numbers of these cells in the spleen, blood, and lymph nodes (Harris et al., 2012). We then focused on CXCL9 and CXCL10, potential downstream effectors of IFN-γ in vitiligo, because they were the most highly expressed genes in both human and mouse lesional skin, and were known to mediate IFN-γ-dependent T cell migration into peripheral tissues. We found that melanocyte-specific, autoreactive T cells in vitiligo patients expressed CXCR3, the receptor for CXCL9 and CXCL10, in both the blood and lesional skin. Additional studies in our mouse model implicated CXCL10 in promoting T cell migration and effector function in the skin. We found that blocking CXCL10 with neutralizing antibody was able to both prevent and even reverse established vitiligo, strongly suggesting that targeting the IFN-γ-CXCL10 pathway could be an effective treatment strategy (Rashighi et al., 2014).

This strategy could incorporate cytokine/chemokine biologics, such as antibodies against IFN-γ, the IFN-γ receptor, CXCL10, or CXCR3, many of which have already been developed for other diseases. In addition, small molecule inhibitors of the IFN-γ receptor, CXCR3, or key intracellular signaling pathways, such as STAT1, Jak1, and/or Jak2, could also be an effective approach. An exciting case in proof of this concept was recently published, where a patient with vitiligo repigmented during treatment with tofacitinib, a pan-Jak inhibitor with the following selectivity: Jak3>Jak1>Jak2 (Craiglow and King, 2015). We also recently reported that simvastatin, an HMG-CoA reductase inhibitor that also happens to inhibit STAT1 activation in vitro, was effective at both preventing and reversing vitiligo in our mouse model (Agarwal et al., 2014).

Thus, we believe that a targeted therapeutic strategy focused on inhibiting members of this pathway offers a number of exciting new targets for treatment, including both biologics that can neutralize or block cytokine/chemokine signaling, as well as small molecule inhibitors of the pathway...
We expect that combining IFN-γ signaling blockade with nbUVB may be synergistic, because promoting melanocyte growth, migration, and differentiation is also a key component of repigmenting the skin. We think that the future for vitiligo patients is bright, as new, targeted treatments are developed, potentially providing greater efficacy and safety for patients who suffer from this potentially devastating disease. Of course, this strategy must be tested in patients more extensively before we get too excited, but I’m highly optimistic.

Figure 3. IFN-γ-CXCL10 signaling pathway that may be targeted to develop new vitiligo treatments.

**References:**


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**HOT OFF THE PRESSES**

‘Chemieexcitation of melanin derivatives induces DNA photoproducts long after UV exposure.’

_A brief commentary by Nico Smit, Stan Pavel, and Patrick Riley_

Among the many properties and functions of melanins, their role in photoprotection is well established by such criteria as the protection from sunburn and the low incidence of skin cancer in populations with Type VI pigmentation. However, it has long been recognized that there are cellular hazards associated with melanogenesis, and melanins may function in a photosensitizing capacity which renders them a “double-edged sword” in the colourful analogy of Hill et al. [1].

There is evidence that pigmented cells are differentially susceptible to UV-induced mutagenesis [2] which suggests that melanin may be implicated in secondary phototoxicity, and post-irradiation delayed formation of cyclobutane pyrimidine dimers (CPDs) has been observed in melanotic cells [3].

Generally speaking, the direct cytotoxic reactions of radiant energy are short-lived and the presence of melanin in cells, usually in melanosomes or equivalent organelles, is thought to diminish cytotoxicity by absorption and dissipation of energy from UV irradiation [4]. However, secondary phototoxicity may result from oxidative stress, largely as a result of the action of longer-lived reactive oxygen species (ROS) [5]. The reactions involved may include the initiation of lipid peroxidation, damage to critical cellular components, and depletion of antioxidants, but in many cases the mechanism of secondary phototoxicity is unknown.

In the wide-ranging and well-researched investigation recently published in *Science*, Premi et al. give an interesting account of a mechanism whereby oxidative stress may cause DNA damage in melanin-containing cells. In essence, they
propose that oxidative attack on melanin releases melanogens which are converted to a dioxetane derivative able to be activated to a triplet state and cause the formation of CPDs in nuclear DNA. They show that the reaction is dependent on the presence of melanin, as albino melanocytes were not affected, but independent of melanogenesis since delayed (so-called ‘dark’) CPDs induced by UVA in K14-Kitl mouse epidermis are due to melanin in keratinocytes.

Using model systems the authors show that melanin and its precursors, dihydroxyindole-2-carboxylic acid (DHICA) and 5-S-cysteinylDOPA (5SCD), combined with peroxynitrite can induce the formation of CPDs, where DHICA and 5SCD were chosen as eu- and pheomelanin precursors, respectively. The structural data presented is confined to the eumelanin precursor and they show by mass spectroscopy the formation of a compound of MW 225, consistent with a dioxetane adduct of DHICA which could act as the putative triplet carbonyl carrier.

In our previous study we were able to alter the ratio of pheo/eumelanin content of cultured melanocytes in a system where melanogenesis was regulated by modifying the tyrosine content of the culture medium and, under these in vitro conditions, greater formation of delayed CPDs was associated with lower pheomelanin content observed in melanocytes grown in low tyrosine concentrations [3].

It is known that various intermediates of pheo- and eumelanin are highly reactive and the antioxidant capacity is a crucial factor in protecting cells against potentially diffusible intermediate products of melanogenesis [6]. Also the production of ROS exceeding the cellular antioxidant defence will result in oxidative stress where intracellular compartmentation is disturbed or the presence of chain-breaking antioxidant compounds or protective enzyme systems is lacking [7]. A clinical example of DNA hypermutability has been described in a patient with a homozygous CDKN2A/p16 germline mutation in combination with a deficiency of the antioxidant enzyme glucose-6-phosphate dehydrogenase [8].

In the study by Premi et al., the authors show that the post-irradiation formation of CPDs is reduced or prevented by various antioxidant treatments. Overall, the proposed mechanism of formation of ‘dark’ CPDs is plausible and their evidence is impressive. The mode of access by melanin precursors or the products of melanin degradation responsible for nuclear DNA damage remains to be further clarified. Melanization of nuclear DNA seems possible since, according to our experience, isolated nuclear fractions and DNA from melanocytes show considerable pigmentation, although artefacts of DNA isolation procedures are difficult to rule out.

There remain some questions regarding the nature of the apparent specificity of the CPD-forming reaction and some other details. However, the comprehensive study by Premi et al., offers an interesting insight into melanin participation in secondary phototoxic damage to DNA which may suggest some new approaches both to melanoma prevention and targeted therapy [9,10].

References:


Contact:
Dr. N.P.M. Smit (n.smit@lumc.nl)
Bioanalytical Chemist, Dept. of Clinical Chemistry, Leiden University Medical Center, Leiden, The Netherlands

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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 paspcr.newsletters@gmail.com.

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.

POSITIONS AVAILABLE

University of Cincinnati, Department of Dermatology

A postdoctoral position is opened in the laboratory of Dr. Zalfa Abdel-Malek in the Department of Dermatology, University of Cincinnati.

The candidate should have strong expertise in tissue culture and molecular biology, and is willing to participate in mouse studies aimed at determining the responses to UV and various melanocortin analogs. The candidate is expected to be creative and capable of conducting a designated project independently, and to have good writing skills. This position is funded by a NCI training grant which requires that the applicant be a U.S. citizen or permanent resident in the U.S.A., and is for 2 years. If interested, please email Dr. Zalfa Abdel-Malek immediately at: abdelmza@uc.edu.

Faculty Positions in Cancer Research

The University of Kentucky Markey Cancer Center invites applications from outstanding candidates for several faculty positions at the level of Associate or Full Professor. Faculty with expertise in the following areas are of specific interest: tumor microenvironment, cancer genomics, cancer immunology, epigenetic regulation, oxidative stress, mitochondria and cancer metabolism, and DNA repair. The successful candidate must have a Ph.D., M.D. or M.D./Ph.D. degree, be highly productive and will be expected to bring and maintain a vigorous, independent, extramurally funded research program. S/he will also actively participate in collaborative investigations and education programs in the University of Kentucky Medical Center. Generous start-up funds, competitive salary, and modern laboratory space are available.

The NCI-designated Markey Cancer Center is on the campus of the University of Kentucky, a land-grant institution founded in 1865. Adjacent to downtown Lexington, the University of Kentucky is nestled in the scenic heart of the Bluegrass
region of Kentucky. Recently ranked as one of the safest, most creative, and the brainiest cities in the nation, Lexington is an ideal location to experience the work-life balance that the University strives to provide to its faculty.

Applications, including curriculum vitae, a brief summary of accomplishments and future research directions, should be sent to: MCC Faculty Search Committee, c/o Dr. Nathan L. Vanderford via email at nathan.vanderford@uky.edu. The review of applications begins immediately and will continue until the positions are filled.

*The University of Kentucky is an Equal Opportunity Employer*