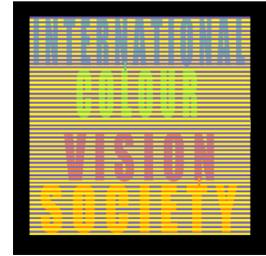


DALTONIANA

www.icvs.info

No. 106

December 2006



Come to ICVS07 Belém, Brazil

Conference announcement 19th Symposium
of the International Colour Vision Society,
July 27-31, 2007, Belém, Brazil
<http://www2.ufpa.br/icvs2007/index.html>

Topics:

- New views of cones and pigments
- Colour vision of New-World primates
- Acquired colour deficiencies
- Colour and reality
- Nagel anomaloscope centennial

Confirmed speakers and chairs:

- John Barbur, Shinya Nishida
- Jim Bowmaker, Gordon Plant
- David Brainard, Horacio Schneider
- Ricardo Gattas, David Williams
- Jerry Jacobs, Qasim Zaidi
- Ellis Loew

Dates:

- Abstract submission: December 2006
- Early registration: December 2006
- Submission and early registration
deadline: April 2007

Organizers:

- Luiz Silveira (luiz@ufpa.br)
- Dora Fix Ventura (dventura@usp.br)
- Barry Lee (blee@sunnyopt.edu)

Links:

www.v-brazil.com/tourism/para/belem.html
www.paratur.pa.gov.br/index.cfm
www.amazonadventures.com/marajo.htm
www.ariauamazontowers.com/



Renew Your ICVS Membership

Neil Parry, PhD
Treasurer & Membership Officer
International Colour Vision Society

Seasons greetings to you all from Manchester. When Anne Kurtenbach handed me the membership baton a year or so ago, she reassured me that there would be little to do until the beginning of 2007, when I would have to deal with a flood of membership applications. In fact there have been two largish jobs, firstly moving the treasury to an English Bank and secondly setting up a new payment system. Its all ready to go so I am sitting here waiting for the flood. Dues are unchanged from last time, except that it includes the admin fee, which covers our bank, credit card and currency conversion charges.

You can now renew your membership online using your credit card, via Paypal. Just go to the new website, www.icvs.info and seek out the membership link. Luddites, technophobes and other traditionalists can send me a cheque. I am pleased to say that we can now accept cheques in your own currency, as long as you do the conversion from euros. All payment details are enclosed with this issue of Daltoniana, along with a postal application form, which you only need to send me if paying by cheque. Email me if you have any problems.

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VERRIEST MEDAL WINNER 2007

Prof. Barry Lee, PhD
SUNY Optometry

The International Colour Vision Society is pleased to announce that the Verriest Medal will be awarded at the 2007 biennial symposium in Belém, Brazil (July 27-31, 2007) to Barry B. Lee, Professor of Biological Sciences at the State University of New York, College of Optometry, New York, NY, USA.

This award is bestowed by the Society to honor long-term contributions to the field of color vision. Professor Lee is an innovative multidisciplinary scientist who has an extraordinary record of productivity. He has made significant contributions to our understanding of basic coding mechanisms in visual processing and is recognized for his efforts at bridging the gap between psychophysics and physiology. In addition, through collaborative efforts, he has been at the center of the great advances that have been made in the last 20 years in unraveling the relations between structure and visual function in the retina. Finally, the Society recognizes his long-term service to the society, as member of the board of directors, meeting organizer and proceedings editor.

More information about the 2007 ICVS biennial symposium in Belém, Brazil, at which Barry Lee will give the Verriest Lecture and the medal will be presented, can be found at www.ufpa.br/icvs2007

Steve Buck, PhD
General-Secretary
International Colour Vision Society

Editorial

Dingcai Cao, PhD and Andrew J. Zele, PhD

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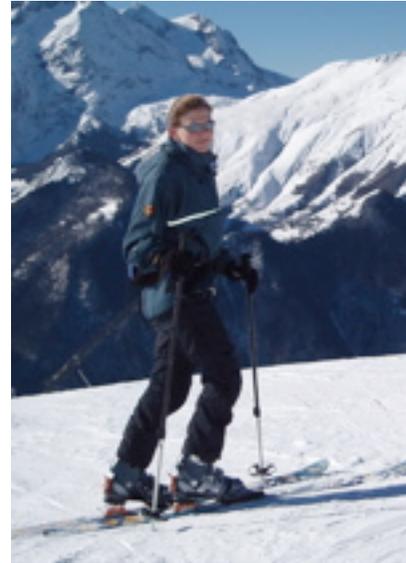
Congratulations to Barry Lee for the award of the Verriest Medal.

The 19th ICVS symposium is rapidly approaching and colleagues are encouraged to register as early as possible. Do not forget that registrants should determine if they require an entry Visa for Brazil – the Belém ICVS website provides links to the Brazilian consulate.

We always welcome contributions to Daltoniana, so please feel email them.

Junior Member Profile: *Hannah Smithson, PhD*

Hannah Smithson graduated from the University of Cambridge in 1996, with a BA in Natural Sciences. She began her graduate studies later that year in John Mollon's laboratory in Cambridge. Her thesis work focused on visual masking, where the visibility of one stimulus is influenced by the presence of a second, masking stimulus. Within this topic she developed her interests in spatial vision, colour vision and in sensory memory.



She was awarded her PhD in 2000, and moved to the USA to work as a post-doctoral researcher with Joel Pokorny at the University of Chicago. Here she worked on mechanisms of colour vision, contributing to the development of a photostimulator that allows independent control of rods and the three cone types. In 2001 she joined Qasim Zaidi's laboratory at SUNY College of Optometry, to work on colour constancy. During Hannah's time in New York, a further collaboration developed as she and Qasim worked with Barry Lee and Hao Sun on the specificity of cone inputs to macaque ganglion cells.

In 2002, Hannah returned to the UK. She was appointed as an Affiliated Lecturer at the University of Cambridge, and had her first real taste of life as a University Lecturer, teaching final year courses in Visual Perception and supervising undergraduates in a broad range of topics in psychology. In 2003 she moved to London as a Senior Research Fellow in Andrew Stockman's laboratory at the Institute of Ophthalmology, UCL. Hannah and Andrew worked on multiple projects, spanning the range from low-level vision (e.g. changes in the temporal response of the visual system with light adaptation) to high-level vision (e.g. using the Stroop task to reveal the organization of central representations of colour).

In September 2005, Hannah was appointed to a Lectureship in the Department of Psychology at Durham University. Durham is situated in the North-East of England, surrounded by beautiful countryside. Here she continues to pursue her research, with particular interests in the mechanisms of colour vision, and in sensory storage. In October 2006, Robert Lee began his graduate studies under Hannah's supervision.

Selected Publications

- Smithson, H. E.** & Mollon, J. D. (2006) "Do masks terminate the icon?" *Quarterly Journal of Experimental Psychology*. 59 (1): 150-160.
- Sun, H., **Smithson, H. E.**, Zaidi, Q. & Lee, B. B. (2006) "Specificity of cone inputs to macaque retinal ganglion cells." *Journal of Neurophysiology*. 95: 837-849.
- Smithson, H. E.**, Khan, S. S., Sharpe, L. T. & Stockman, A. (2006) "Transitions between colour categories mapped with a reverse Stroop task." *Visual Neuroscience*. 23 (3-4): 453-460.
- Smithson, H. E.** (2005) "Sensory, computational and cognitive components of human colour constancy." *Philosophical Transactions of the Royal Society: Biological Sciences*. 360 (1458): 1329-1346.
- Pokorny, J., **Smithson, H. E.** & Quinlan, J. (2004) "Photostimulator allowing independent control of rods and the three cone types." *Visual Neuroscience*. 21 (3): 263-267.
- Smithson, H.** & Zaidi, Q. (2004) "Colour constancy in context: Roles for local adaptation and levels of reference." *Journal of Vision*. 4 (9): 693-710.
- Smithson, H. E.**, Sumner, P. & Mollon, J. D. (2003) "How to find a tritan line." In *Normal and Defective Colour Vision*, Eds: Mollon JD, Pokorny J & Knoblauch K, Oxford University Press, Oxford, UK.

OBITUARY: Dr. Robert Merrill Boynton (1924-2006)



I'm sad to announce that my father, Robert M. Boynton passed away peacefully in his home yesterday in the presence of his wife and family. He died from bladder cancer, and would have been 82 in October.

Perhaps best known for his book 'Human Color Vision' published in 1979, my father logged more than 30 years of continuous publications spanning four decades from 1952 to 1990. Although his main focus was on the study of color vision using visual psychophysics, he had a variety of additional research interests including physiological optics, light adaptation, and temporal sensitivity. He received many awards for his tireless efforts including OSA's Tillyer Medal (1971), election to the Society of Experimental Psychologists (1971), the Frederick Ives Medal (1995) the Shaker Heights High School Hall of Fame (1996), the Prentice Medal of the American Academy of Optometry (1997), and election to the National Academy of Sciences (1981).

My dad took his first academic position in 1952 as an assistant professor at the University of Rochester's Department of Psychology soon after completing his PhD with Lorrin Riggs at Brown University. In 1963 at age 39 he founded and headed the Center for Visual Science at U of R, which continues to thrive to this day. He and his family moved to San Diego in 1974 where he worked at the UCSD Department of Psychology until his retirement in 1991. During this time he also served administration roles, including as an Associate Dean at the Office of Graduate Studies and Research. He also served as the chairman of the board of editors for the journal *Vision Research* from 1982-1986.

He retired from UCSD in 1991 to pursue his longstanding interests in baseball research. His publication record thereby continued uninterrupted through 2004, with articles such as "Three Hours Instead of Five: Playing a 2000 World Series Game at the 1948 Pace" in the journal *Grandstand Baseball Annual* (2001).

On a personal note, I was honored to be able to pass on to my father the kind and thoughtful words sent to me by so many friends, students and collaborators from the vision community. He was overwhelmed by these sentiments and they greatly helped with his peace of mind in his final days.

He is survived by his wife Sheleah, and children Sherry, Mike, Neil and myself and five grandchildren.

Provided by Geoffrey M. Boynton, Associate Professor, Systems Biology, The Salk Institute

Selected Colour Abstracts

A low-power, LED-based, high-brightness anomaloscope

R.L. Woods, A. L. Rashed, J. M. Benavides, R.H. Webb, *VISION RESEARCH* (2006). 46: 3775–3781

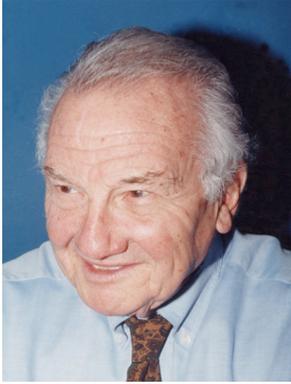
Color matches made with a Nagel anomaloscope are used in the differentiation of color vision deficiencies. When these color matches are made over a wide range of retinal illuminances, the changes in the color match provide information about the regeneration kinetics and the absorption spectra of the middle- and long wavelength cone photopigments. These steady-state color matches vary with a variety of conditions, and may have value in screening for eye disease. Recently, high-brightness LEDs have become available that allowed us to construct a LED based, high-brightness anomaloscope. We used inexpensive, low-energy components to replicate an earlier instrument, getting a maximum retinal illuminance over 5.6 log Trolands.

Detection of multidimensional targets in visual search

P. Monnier, *VISION RESEARCH* (2006). 46: 4083–4090

Search performance for targets defined along multiple dimensions was investigated with an accuracy visual search task. Initially, threshold was measured for targets that differed from homogeneous distractors along a single dimension (e.g., a reddish target among achromatic distractors, or a right-tilted target among vertically oriented distractors). Threshold was then measured for a multidimensional target (a redundant target) that differed from homogeneous distractors along two dimensions (e.g., a reddish AND right-tilted target among achromatic, vertically oriented distractors). Search performance for multidimensional target combinations of chromaticity and luminance, chromaticity and orientation, and chromaticity and spatial frequency was tested. Measurements were evaluated within several summation models, allowing for a test of the mechanisms mediating the detection of multidimensional targets in search. Measurements were generally consistent with probability summation suggesting the particular combinations of stimulus dimensions tested were coded along independent, noisy, neural mechanisms.

OBITUARY: Dr. Jean Louis Vola (1917-2006)



It's with great sadness that the members of the ICVS learned of the death of Dr Jean Louis Vola, one of the earliest members of our society.

Jean Louis Vola was born in Hanoi on 28 April 1917, when Vietnam was a French colony. He did his medical studies in the military school of medicine in Bordeaux, presenting his thesis in 1942. After World War II, he worked as a physician in Madagascar and from 1951 to 1953 during the Vietnam War. His activity as a surgeon in the hospital in Queng – Tri was honoured by the “Croix de guerre” (French military decoration) and by the title of “Chevalier de la Légion d’Honneur”. Returning in France, he left the army in 1958 and began a second career as an ophthalmologist.

At the “Hotel Dieu” in Marseilles, Jean Vola became the faithful collaborator of Pr Jayle and of his successor, Pr Saracco, working in the study of visual field and of ERG, and particularly on the important book for the French Ophthalmological Society in 1965. Then he oriented his activity toward color vision, his first work being a monograph of 106 pages about “The exploration of color vision” (1970). When Guy Verriest founded in 1970 the International Research Group for Colour Vision Deficiencies, Jean Vola was one of the first participants, presenting two papers in the first historical symposium of Ghent in 1971; subsequently presenting papers at the symposia of Parma (1977), Strawberry Hill (1979), Geneva (1983). In 1985 he organized the 8th symposium of the IRGCVD in Avignon, subsequently publishing in the proceedings from the meetings of Tübingen (1993) and Ghent (1997). Simultaneously, Vola was the founder of the French Group for the Study of Color Vision, remaining its perpetual secretary. His publications during 40 years were mainly on the influence of the luminance level on visual functions, the clinical applications of the Stiles two colors technique, and the study of dyschromatopsias in glaucoma, diabetes and neurological pathology. At 84, he participated in the writing of the annual report of the French Ophthalmological Societies (2001, editor: Jean Leid). His last paper, written at 86 years at the meeting of the French ophthalmology society, was on the surgery of cataract in Mauritania (where he had worked for some time). It should also be mentioned that while he did not have a university post, he was responsible for the training of at least one notable student, Dr. Jean Leid.

Jean Louis Vola had preserved from his military life a taste for physical activities: deep-sea fishing and tennis; he learned to surf after 55 years, and continued to ski after 80 years. But Vola had also a broad and multiple culture, debating about philosophy, literature and art until his last days, and with the same hot fervour and generosity that he displayed in his numerous friendships.

Jean Louis Vola died on 15 September 2006, after a cerebral vascular stroke; he leaves 4 sons, and a large brood of grandchildren.

Provided by Dr. Philippe Lanthony

Symposium Summary: Coloured Filters and the Eye

Jennifer Birch, Applied Vision Research Centre, City University

An international symposium was held at City University on November 17th and 18th to discuss the protective functions of intraocular filters. There were 50 participants from the UK, Europe and USA. Eighteen lectures were given and techniques for measuring macular pigment density were demonstrated.

The lens and macular pigment (MP) are both important intraocular filters which protect the eye from the damaging effect of ultra violet and short wavelength light (“the blue light hazard”). UV protection is provided by the lens. Optical density increases with age and lens yellowing provides additional protection in the visible range. For example, the wavelength of 50% transmission is at 430nm in the neonate but at 510nm over 70 years of age. Intraocular lens implants afford the same protection from UV as the natural lens and are routinely tinted yellow. Most IOLs mimic the absorption characteristics of the normal lens and “cut

off" at about 400nm. Delegates discussed the merits of implant filters which "cut off" at 440nm. These would provide maximum protection from "the blue light hazard", be little affected by differences in lens power and have no significant effect on rod function.

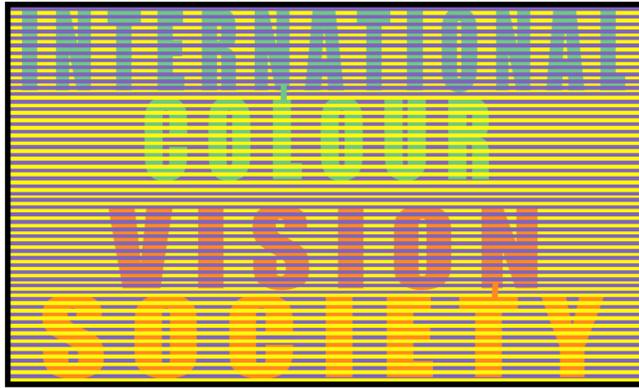
Macular pigment consists of two carotenoids, lutein and zeaxanthin. These cannot be synthesised in the body but are available in the diet, especially egg yolk, spinach and kale. MP optical density varies individually and does not change with age. Studies which suggest an age related decline have not made adequate allowance for lens density. MP lies along the cone receptor axons within the nerve fibre layer of Henle and absorbs wavelengths between about 390 and 530nm. MP is not bleached by light but has an antioxidant role and acts as a free radical scavenger within the retina. Peak absorption is at about 460nm. Spatial distribution peaks in a ring about one degree from the fovea, where the nerve fibre layer is thickest, and decreases rapidly with eccentricity up to about 6 degrees laterally. Intense light exposure is known to increase the circulation of free radicals in the retina. Experimental results show that people with high MP optical density recover faster from photo-stress tests and are less susceptible to disability glare. Current interest in MP arises from reports that patients with age-related macular degeneration (AMD) have low MP density. However it is still unknown whether high MP density protects against the disease. This can only be established in longitudinal studies but the possibility of increasing MP with nutritional supplements has resulted in an explosion of research papers.

Different measurement techniques for measuring both the optical density and spatial distribution of MP were described and discussed. These included psychophysical measurements using heterochromatic flicker, two wavelength auto-fluorescence, high performance liquid chromatography and electro-diagnostic techniques. It was noted that although similar trends were found, in terms of high, medium and low optical density, there was no one to one correspondence between the values obtained and no "gold standard" method could be recommended. Further collaboration between different measurement centres was envisaged. There was general agreement on experimental details, such as field size and elimination of scattered light, which should be reported in future studies. Ophthalmologists asked for measurements to be fast and friendly so that they could be included in epidemiological studies.

Several supplementation trials were reported. These included supplementation with lutein and zeaxanthin alone or in combination. Results were reported after 3 months, 6 months or 12 months supplementation and for a period after discontinuation. The findings were very different. One study found a significant increase in MP density in people over 70 years of age, with initial features of AMD, which was sustained for several months after discontinuation. Another study demonstrated a modest increase, in normal middle aged volunteers, which speedily returned to pre-supplementation levels after supplementation was withdrawn. Reporting average results obtained in trials was shown to mask large differences in individually responses. About a quarter of subjects were "non-responders" who showed no increase in MP optical density in spite of increased serum levels of lutein and zeaxanthin. These results suggest unidentified differences in retinal metabolism. The question of whether these were due to genetic or environmental factors was addressed in a study at the Twin Research and Genetic Epidemiology Unit at St Thomas' Hospital. Two different techniques for measuring MP optical density were used and compared. The results showed that identical twins had exactly the same optical density and spatial distribution but non-identical twins did not. This study failed to show a significant increase in MP optical density in any of the 300 subjects supplemented in spite of dramatically raised serum levels of lutein and zeaxanthin. These results led Professor Chris Hammond to conclude that routine supplementation with lutein and zeaxanthin could not be recommended to the general public. He suggested that a number of additional subject parameters might need to be included in future studies, such as tissue type, serum cholesterol, routine medication and other dietary supplements in order to identify patients who are most likely to benefit from supplementation.

Delegates were reminded of rapid expansion determining genetic factors which increase the risk of developing AMD. Electron-micrographs showed the intimate relationship between the receptors, MP, retinal pigment epithelium and choroid. All these structures were abnormal in AMD and concentrating on MP may not be the best way forward. At present patients should be recommended to protect against unnecessarily high light levels and maintain a healthy life style. It is essential to give up smoking, maintain a Body Mass Index less than 25, control blood pressure and eat a diet rich in antioxidants. Happily this is also protects against developing Type II diabetes.

The symposium was organised by the Colour Group Great Britain and was sponsored by Bausch and Lomb, Essilor (UK) Ltd, Cambridge Research Systems and DSM Nutritional Products.



ICVS

Postal Membership Application

2007-2008

Membership of the International Colour Vision Society is in 2-year cycles. For the period 1/1/07 to 31/12/08, the subscription is €128 (regular members) or €27 (retired and student members). These fees include all our transaction processing charges. All members are entitled to receive a copy of the proceedings of the two-yearly conference, held in Belem, Brazil in July 2007.

Credit card payments are now processed on-line. Please go to the membership page of the ICVS website (www.icvs.info) and follow the appropriate links. If the online payment link is not active, please email me and I will send you a message with a link in it. **If you are paying on line you do not need to complete this paper form as well.**

For cheque payments, please complete the enclosed form and mail it with a cheque either in euros or in your own currency. You can perform the currency conversion by visiting www.xe.com, or as a google search

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If you have any questions about your payment or other membership issues, please contact me.

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ICVS Postal Membership Application 2007-2008

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