P A S P C R

Newsletter

Volume 1 Number 3 *September, 1993*

Introduction . . .

The quarterly **PASPCR** ***Newsletter*** is intended to serve as an informal means for the members of our Society to communicate with one another. As such, we invite our membership to actively contribute to the ***Newsletter***. Help us to update the Job Listings and Calendar of Events. 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. If you should have a change of affiliation and address, we'd like to know that, too. This is **your** ***Newsletter***, and we depend upon you to help us make sure it best serves the Society's needs. Contributions and comments can be sent to any of the members of the Publications Committee listed in this issue. Special thanks go to Julian M Menter as a Contributor to this issue.

Welcome to New Members :

We welcome the following new members to the **PASPCR** . . . .

Timothy J. Frew
Isabelle C. Le Poole
Hee-Young Park
Kenneth M. Tramposch

If anyone is interested in joining our Society or wishes to sponsor a member, application forms can be obtained from Dr. Richard King.

IN THIS ISSUE . . . .

PanAmerican Society for Pigment Cell Research

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Dr. Seth J. Orlow
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Calendar of Events :

September 21 - 23, 1993 Fifth World Congress on Cancers of the Skin, to be held Berlin, Germany (contact: Dr. Claus Garbe, Department of Dermatology, University Medical Center Steglitz, Hindenburgdamm, 30, 1000 Berlin 45, Germany; FAX: 49/30/798-4141)

September 26 - 30, 1993 XVth International Pigment Cell Conference, to be held in Kensington, UK (contact: Mrs. Rosemary Barton, IPCC Conference Office, P.O. Box 1773, London E17 9LW, United Kingdom, FAX: 44/81/503-6463)

October 28 - 31, 1993 Tricontinental Dermatology Conference, to be held in Kyoto, Japan (contact: Dr. Koucihi Ikai, Dept of Dermatology, Kyoto University Faculty of Medicine, Kyoto 606, Japan)

December 11 - 15, 1993 American Society of Cell Biology Meeting, to be held New Orleans, Louisiana, (contact: ASCB National Office, 9650 Rockville Pike, Bethesda, MD FAX: 301/530-7139)

March 11 - 12, 1994 Melanin Symposium, Melanin: Its Role in Human Photoprotection, to be held in Crystal City, Virginia, (contact: Dr. Ago Ahene, 3696 Haven Avenue, Redwood City, California, 94063, FAX: 415/368-4470)

April 10 - 13, 1994 Annual Meeting of the American Association for Cancer Research, to be held in San Francisco, California (contact: AACR Office, Public Ledger Building, 620 Chestnut Street, Suite 816, Philadelphia, PA 19106-3483 FAX: 215/440-9313)

April 27 - 29, 1994 Annual Meeting of the Society for Investigative Dermatology, to be held in Baltimore, Maryland, (contact: SID Office, Department of Dermatology, University Hospitals of Cleveland, 2074 Abington Road, Cleveland, OH 44106, FAX: 216/844-8993)

June 26 - 29, 1994 5th PASPCR Annual Meeting, to be held in Philadelpia, Pennsylvania, (contact: Dr. Gert Jacobsohn, Department of Biological Chemistry, Hahnemann University, Broad and Vine, Philadelphia, PA 19102-1192, FAX: 215/762-3722)

Corporate Sponsors

The **PASPCR** would like to acknowledge and thank our Corporate Sponsors. Financial gifts from these sponsors have allowed our Society to increase benefits to the membership far out of proportion to the actual dues collected from members. Monies contributed by these sponsors have been used over the years to support various **PASPCR** functions including our Young Investigator Award program, meeting travel stipends, annual meeting expenses and this *Newsletter*.

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PASPCR Honorary Member

by Murray Brilliant

Dr. Elizabeth (Tibby) Russell, Senior Staff Scientist Emeritus at the Jackson Laboratory, has been chosen as the first recipient of an Honorary **PASPCR** Membership by unanimous vote of the **PASPCR** Council. A plaque documenting this distinction will be presented to Tibby (as she is known by her friends and colleagues) at the upcoming **PASPCR** Meeting in Philadelphia in June, 1994. Our recognition of Tibby's seminal contributions to the genetics of pigmentation represents the latest of many honors during her most distinguished career. In addition to her work in pigmentation, Tibby is widely recognized for her work in hematology, developmental biology, aging and especially for her efforts to promote the mouse as a model system for studying genetic disease. The genetics and biology of pigmentation have been an important part of her research from the beginning of her illustrious career. Her thesis work (from 1934-1937 at the University of Chicago) under Seawell Wright was on the underlying genetics of pigmentation in guinea pigs. She changed from studying guinea pigs to studying the mouse at The Jackson Laboratory, where she began her independent research 56 years ago, but her interest in pigmentation continued. Tibby began to apply a methodological, organized and quantitative approach to the characterization of a series of pigmentation mutations in the mouse. In pioneering studies published between 1946 and 1949[*], a total of six mutant loci were characterized, singly and in combination. These loci included *c* (albino), *p* (pink-eyed dilution), *d* (dilute), *b* (brown), *a* (agouti) and *W* (dominant spotting). The individual affects of mutations at these key loci and their interactive hierarchy were reported. In a recent interview, Tibby noted her pleasure at recent successful cloning and molecular characterization of all of these loci. Her predictions about the action of these genes are indeed being born out. However, she is most proud of the role that she played in the development, advancement and encouragement of the scientific careers of a now very large network of researchers. Whether directly or indirectly, all of us involved in pigmentation research are indebted to Tibby for her many efforts in promoting pigmentation research.

[*]Russell, E.S., *Genetics*, 31:327-346 (1946); Russell, E.S., *Genetics*, 33:228-236 (1948); Russell, E.S., *Genetics*, 34:133-166 (1949); Russell, E.S., *Genetics*, 34:708-723 (1949).

1994 PASPCR Vth Annual Meeting

The Vth Meeting of the **PASPCR** will be held in Philadelphia, Pennsylvania from June 26-29, 1994. Dr. Gert Jacobsohn is the Organizer of this meeting, and he and his Program Committee have already assembled a number of exciting keynote speakers and the outline of a most interesting scientific program. More information about this meeting and the tentative program will follow in future ***Newsletters***. We hope that all members of the **PASPCR** will plan to attend this meeting - be sure to mark it on your calendar.

1995 PASPCR VIth Annual Meeting Site :

We are currently soliciting applications from anyone interested in hosting the VIth Annual Meeting of the **PASPCR**, preferably in the middle of 1995. If you are interesting in bidding for this Conference, please contact one of the officers of the **PASPCR**. Previous meeting sites to date have been: Ist - Minneapolis, Minnesota; IInd - Bethesda, Maryland; IIIrd - Edmonton, Alberta; IVth - Cincinnati, Ohio. The Vth meeting will be held in Philadelphia, Pennsylvania (cf above).

In Memoriam ...

by DeWayne Townsend

Carl J Witkop, Jr, a pioneer in the field of human pigmentation passed away March 11, 1993 at the age of 72. He will be missed by all pigment biologists. Dr. Witkop was Professor Emeritus at the University of Minnesota where he had been on the faculty of the School of Dentistry since 1966 following 10 years at the National Institutes of Health. Carl founded one of the very first organized groups at the NIH to study human genetics and became Chief of the Human Genetics Section (later Branch) at the N.I.D.R. at the age of 36.

Dr. Witkop was born in East Grand Rapids, Michigan on December 27, 1920. He served with distinction in the United States Army as a Captain in the Tank Corps in North Africa and Italy in the surrender of the Italian army and he was awarded the Silver Star. He received a B.S. (Chemistry) from Michigan State in 1944 and a D.D.S. from the University of Michigan in 1949. He began his career as an oral pathologist at the National Institute of Dental Research in 1950 and earned the M.S. in Oral Pathology at the University of Michigan in 1954. He became a Diplomat of the American Board of Oral Pathology two years later and began his activities at the National Institute of Dental Research.

Dr. Witkop was a past Secretary of the American Society of Human Genetics, Director of the International Pigment Cell Society, Associate Editor of *Pigment Cell Research* and *American Journal of Medical Genetics*, President of the American Board of Oral Pathology and was active in many other national organizations. Carl had life long interests in pigment metabolism abnormalities, human inbreeding and hereditary tooth and oral diseases. He had nearly 300 scientific publications and was very instrumental in the establishment of NOAH (National Organization for Albinos and Hypopigmentation), a support and information organization for individuals and families. His last project was an epidemiological study in Puerto Rico of Hermansky-Pudlak syndrome, a disorder of defective pigmentation and blood clotting. He will be long remembered for the education of physicians and families about the diagnosis and care of this disorder.

Dr. Carl J Witkop, Jr. was much more than these professional accomplishments. He had a deep concern for appropriate medical care for patients, establishing support groups and was sometimes known to fill the refrigerator of needy individuals from his own funds. He was never ever too busy to be interrupted and gave generously of his time and attention to students, colleagues, patients and family. Carl was a good man and he will be greatly missed.

Respectfully submitted by Dr. DeWayne Townsend, student of Carl Witkop, Jr.

PASPCR Secretary / Treasurer's Report : by Richard King

Following is a synopsis of the **PASPCR** Council Meeting held by telephone conference call on April 22, 1993. Hearing opened the meeting. The minutes of the telephonic Council meeting of January 28, 1993 were accepted. There were 92 paid renewal and 16 paid new members in the PASPCR. The balance in the checking account is approximately $27,000. The treasurer's report was accepted.

G. Jacobsohn reviewed the plans for the 1994 Philadelphia meeting. A room committment to the Wyndham Franklin Plaza Hotel has been made, and the estimated cost will be $75 per room (with a 10% maximum increase limit) for a single, double or twin. A four person room will be $85 per night. A dinner is planned for Tuesday evening, June 27. Invited keynote speakers have accepted, including Beatrice Mintz, Barbara Gilchrest and Andreas Parsegian. G. Jacobsohn gave his new FAX number: (215) 246-5826. Potential sites for the annual meeting in 1995 were discussed.

Frost-Mason gave the nominating committee report. The nominating committee consists of Frost-Mason, chair, R. Boissy, R. Bowers, N. Milos and N. Granholm. The committee selected five candidates for the three council positions to be filled on January 1, 1994. The slate of candidates will be announced to the membership with time allowed for submission of additional write-in candidates. The mail election will be held in the fall. Abdel-Malek gave the publication committee report. The publication committee includes Abdel-Malek, chair, S. Orlow and M. Brilliant. Suggested additional subjects for future newsletters included a list of manuscripts to appear in *Pigment Cell Research*, book reviews and reviews of other meetings. Members could also be invited to submit information on books or non-academic publications they have written. J. Bagnara gave the membership committee report. A brochure for the Society is needed and King was asked to develop the first draft. Authors publishing in *Pigment Cell Research* who are not members of the Society should be sent a form letter and a brochure inviting them to join the Society. It was suggested that the entire membership be listed in the newsletter so that each society member could identify people who should be encouraged to join. King reviewed the recent communication with the American Skin Association, Inc. regarding the Vitiligo Research Award. This award is now to be given directly by the American Skin Association and will not be given through the **PASPCR**. An *ad hoc* committee was appointed to investigate a **PASPCR** Senior Investigator Award. A. Cochran, J. Pawelek and J. Nordlund, chair.

The first Honorary Member will be Elizabeth S. Russell, Ph.D. A letter of acceptance from Dr. Russell has been received by Hearing. It was suggested that the award be announced in *Pigment Cell Research* in the next few months with the plaque being awarded at the next **PASPCR** meeting in 1994.

Travel stipend requests for the London meeting were reviewed. A total of 7 requests were received and five met the established criteria. The travel stipend for 1993 will be increased to a maximum of $500 for airfare to attend the IPCC meeting in London. The increase in the amount was necessary to provide easier access to the meeting.

There being no further new business, the meeting was adjourned. Minutes prepared by King, Secretary/Treasurer, **PASPCR**.

Meeting Report : **by Julian M Menter**

21st Annual Meeting - American Society for Photobiology, June 21-26, 1993, Chicago, Illinois

There were 20 symposia, 84 contributed papers, 104 posters, 3 special lectures, 3 schools, one short course, and one workshop. These papers covered virtually all aspects of photobiology. The following is condensed from papers which were deemed by this reporter to be of interest to pigment cell biologists. This list undoubtedly reflects the personal prejudice of the reporter; a full listing of abstracts is available on request. Abstracts of Special Interest to Pigment Cell Biologists follow:

Symposium #1: Monitoring Networks and Ozone Depletion. Of potential interest to pigment cell biologists because of the possible link between melanoma and solar UV. **CR Roy and HP Gies** compared solar UV spectral measurements (in Australia) with model calculations. They described an educational intervention program which includes UVB charts for TV stations, use of a solar diary, and a radiation protection program. **D Berger** described the Robinson-Berger network in monitoring solar UV in the US. **LT Cupitt** described the UVB monitoring program at the USEPA. **JH Gibson** described the monitoring program at the USDA. **AR Webb** described aspects of quality assurance and quality control in the measurement of spectral data. **BK Armstrong** discussed the connection between measurement of surface UV irradiance and observed health effects, and concluded that these two are complementary rather than complete descriptions in themselves. In separate papers, **P Simon** and **J Frederick** discussed the effect of natural and man-made variations in atmospheric conditions in monitoring UV.

M Berwick: Epidemiologic Studies of Melanoma: The Relative Roles of Sun Exposure and Early Detection. Epidemiologic analyses generally show 2-fold relative risks for the various types of sun exposure ranging from 0.29 (a protective effect) to 13.0, depending on the type of sun exposure measured and the amount of control for the effect of modifiers such as skin type. More recent studies have demonstrated a strong association between sun exposure and nevi formation. Analysis of the role of sun exposure in increasing melanoma must be placed in the context of other time trends, such as early detection. Data from several population-based slide reviews of melanoma indicate that the largest proportion of increasing incidence in melanoma is due to the highest rates for thinner lesions (*in situ* and < 76 mm Breslow depth) while rates for thicker lesions have remained somewhat more stable.

RM Sayre, MR Chedekel and AB Ahene: Sunlight, Sunscreens, and Free Radicals. Spin-trapping techniques have been applied to a number of sunscreen products to study the photochemical generation of free radicals by these compounds. Results suggest that highly efficient sunblocks as octyl dimethylpaba, butyl methoxydibenzoylmethane, TiO_2 and ZnO produce sunlight-induced free radicals. The intensities of the free radicals generated by TiO_2 and ZnO are 2-3 times orders of magnitude as those generated by "chemical" sunscreens and by melanin. It was speculated that free radical production by melanins might be one way by which harmful radiation is attenuated.

HZ Hill, GJ Hill, U Schlehaider and K Cieszka: Survival of Cloudman Melanoma Cells of Varying Melanin Content after Exposure to UVA, UVB, UVC, and Solar Simulated (FS-

20) Radiation. Cloudman S91/amel (hypomelanotic) and S91/I3 (melanotic) cells were exposed to graded doses of UVC (254 nm), UVB (TL01; 50% 312 nm) UVA (Alison lamp) and FS-20 radiation. Results indicate that the S91/I3 cells were slightly more sensitive to UVC than S91/amel. The difference is augmented when UVB or the FS-20 lamps are used. However, the reverse order of sensitivity was obtained for the UVA source; this parallels earlier results with γ-rays. These results indicate the complexity of response to broadband solar radiation by these melanoma cells.

FA Anthony and ME Costlow: Protein Kinase C Isotype Expression in Melanocytes: Effects of Phorbol Esters, UVA, and PUVA. Normal human melanocytes (NHM) require phorbol esters for growth in culture; UVA and Psoralen + UVA (PUVA) effect their growth presumably through protein kinase C (PKC). These authors examined PKC isotypes by immunocytochemistry in NHM cultured in 10 ng/ml TPA, 100 ng/ml PDBu, or no phorbol ester. TPA expressed predominantly α and ε isoforms; PDBu-grown cells expressed α and β isoforms. UVA caused a 2-fold increase in in PKC-α and 2-fold decrease in PKC-ε. PUVA caused a decrease in PKC-α, and had no effect on PKC-ε. These data show that PKC isotypes in NHM are regulated by phorbol esters and support a role for PKC-isotope switching in UVA- and PUVA-dependent melanocyte functions.

FA Anthony, HM Laboda, JC Dowdy and ME Costlow: 8-Methoxypsoralen forms Photoadducts with Cellular Phospholipids in Cultured Melanogenic Cells. The authors studied 8-MOP covalent photobinding to lipids in cultured S-91 Cloudman melanoma cells and normal human melanocytes. Binding was selective for phospholipids, and partially competitive with excess 8-MOP. The authors suggest a possible role for phospholipids or their metabolites in the biological actions of PUVA.

PV Bennett and BM Sutherland: Differential Response of Normal Human Melanocytes to Single and Multiple Exposures of UV Radiation. Four strains were exposed to single or multiple doses of UVA or UVB. Strain 922 (lightly pigmented) is UV-sensitive; strain 923 (heavily pigmented) is moderately UV-sensitive; strain 926 (moderately pigmented) is UV-responsive and moderately sensitive; strain 928 (lightly pigmented) is highly UV-responsive, exhibits little cell killing and shows significant growth promotion after UV. In contrast to unirradiated melanocytes, UV-irradiated melanocytes grow as anchorage-independent colonies. These results indicate that melanocytes in culture are highly individual in their response to UV.

MF Mutzhas: Reference Action Spectra for Ultraviolet-Induced erythema and Pigmentation for Different human Skin Types. These reference spectra consist of three straight lines when displayed on a log-linear scale.

G Sauermann and U Hoppe: Fluorescence-Free UV/VIS Reflection Spectra of Human Skin - Influence of Moisture Content, Washing, and Pigmentation. Tape-stripping, which removes (pigmented) stratum corneum, raises reflectivity and lowers minimal erythemal dose.

M Boulton, JM Burke, W Korytowski, M Rozanowska and T Sarna: Photoreactivity of Melanin, and Lipofuscin form Retinal Pigment Epithelium. Oxygen photo-uptake (esr) and hydrogen peroxide formation (oxidase electrode) were measured in retinal pigment epithelium from bovine and human eyes as well as in purified melanosomes and lipofuscin granules. Photoconsumption of O_2 occured in all preparations. H_2O_2 was a major product of melanin aerobic photolysis, but not lipofuscin photolysis. Results suggest that both pigments may be potentially phototoxic to the eye.

Z Malik, T Babushkina, M Shafran, Y Nordenberg, R Mamet and N Sheinfeld: Induction of Protoporphyrin Synthesis in B-16 Melanoma and Characterization of Photodynamic Activation. Activation of the porphyrin synthesis pathway, exogenous supply of 5-ALA, and photolysis at 380 nm resulted in enhanced efficiency of photo-killing due to higher protoporphyrin levels.

Positions - Wanted and Available :

Available: Postdoctoral Fellowship: NIH-funded position (for up to 3 years) to study the biogenesis of the melanosome and genetic disorders which affect it. Prior training in either immunomicroscopy or molecular biology desirable. US citizen or permanent resident only. Contact: Dr. Seth Orlow, Dermatology Room H-100, NYU Medical Center, 550 First Avenue, New York, NY 10016. phone: 212/263-5070, FAX: 212/263-8752.

Available: Two postdoctoral positions are available to study the recently described receptors for the proopiomelanocortin peptides (Science, 257:1248, 1992). Ongoing projects include structure/function analysis of the MSH receptor, isolation and characterization of neural-specific proopiomelanocortin receptors, and study of the functions of melanocortins in the CNS. One position requires a background in peptide and protein chemistry for receptor structure/function analysis. The second position would ideally be filled by an individual with training in neurobiology and a strong background in molecular biology. Applicants should send a Curriculum Vitae, a statement of research interests, and three letters of recommendation to: Dr. Roger D Cone, Vollum Institute for Advanced Biomedical Research, Oregon Health Sciences University, 3181 SW Sam Jackson Park Road, Portland, OR 97201-3098. phone: 503/494-4732; FAX: 503/494-4534.

Bibliography :

The Bibliography published in this issue covers the period mid-May through mid-August, 1993. If you notice a paper that was not detected by this search that should be included, please send it to us and we will include it in the next issue. We have highlighted publications which include a member of the **PASPCR** with an asterisk.

MELANINS & MELANOGENS

Broekhuyse RM, Kuhlmann ED, Winkens HJ: Experimental autoimmune anterior uveitis (EAAU) .3. induction by immunization with purified uveal and skin melanins. Exp Eye Res 56:575-583 (1993).

Caiti E, Crippa PR, Viappiani C: Application of photoacoustic phase angle spectroscopy (ΦAS) to eumelanins and pheomelanins. Pigment Cell Res 6:140-144 (1993).

★Enochs WS, Nilges MJ, Swartz HM: Purified human neuromelanin, synthetic dopamine melanin as a potential model pigment, and the normal human substantia- nigra -characterization by electron paramagnetic resonance spectroscopy. J Neurochem 61:68-79 (1993).

Fitzpatrick RE, Goldman MP, Ruizesparza J: Use of the alexandrite laser (755-nm, 100-nsec) for tattoo pigment removal in an animal model. J Am Acad Dermatol 28:745-750 (1993).

Gieseg SP, Simpson JA, Charlton TS, Duncan MW, Dean RT: Protein-bound 3,4-dihydroxyphenylalanine is a major reductant formed during hydroxyl radical damage to proteins. Biochemistry 32:4780-4786 (1993).

Kimura N, Tsuge T: Gene cluster involved in melanin biosynthesis of the filamentous fungus alternaria-alternata. J Bacteriol 175:4427-4435 (1993).

Larsson BS: Interaction between chemicals and melanin. Pigment Cell Res 6:127-133 (1993).

Misu Y, Goshima Y: Is l-dopa an endogenous neurotransmitter. Trends Pharmacol Sci 14:119-123 (1993).
Napolitano A, Palumbo A, Misuraca G, Prota G: Inhibitory effect of melanin precursors on arachidonic acid peroxidation. Biochim Biophys Acta 1168:175-180 (1993).
Nappi AJ, Vass E: Melanogenesis and the generation of cytotoxic molecules during insect cellular immune reactions. Pigment Cell Res 6:117-126 (1993).
Ortonne JP, Prota G: Hair melanins and hair color - ultrastructural and biochemical aspects. J Invest Dermatol 101:S82-S89 (1993).
Renieri C, Ceccarelli P, Gargiulo AM, Lauvergne JJ, Monacelli G: Chemical and electron microscopic studies of cattle (Bos taurus) with four types of phenotypic pigmentation. Pigment Cell Res 6:165-170 (1993).
Ridente Y, Camillo Azzellini G, Siuito Ito A: Free radicals in melanin-cationic porphyrin complexes in the dark and under light irradiation. Pigment Cell Res 6:134-139 (1993).

MELANOCYTES & KERATINOCYTES

Betke M, Suss R, Hohenleutner U, Lubke S, Eckert F: Gastric carcinoma metastatic to the site of a congenital melanocytic nevus. J Am Acad Dermatol 28:866-869 (1993).
Eberle J, Krasagakis K, Garbe C, Orfanos CE: Proliferation and morphology of melanoma cells and benign human melanocytes under varying culture conditions. Melanoma Res 3:107-112 (1993).
Gilhar A, Aizen E, Ohana N, Etzioni A: Vitiliginous vs pigmented skin response to intradermal administration of interferon-γ. Arch Dermatol 129:600-604 (1993).
Halper S, Rubenstein D, Prose N, Levy ML: Pigmentary lines of the newborn. J Am Acad Dermatol 28:893-894 (1993).
Heimann P, Ogur G, Debusscher C, Morandini R, Libert A, Vamos E: Chromosomal findings in cultured melanocytes from a giant congenital nevus. Cancer Gen Cytogenet 68:74-77 (1993).
Hu DN, McCormick SA, Ritch R: Studies of human uveal melanocytes invitro - growth regulation of cultured human uveal melanocytes. Invest Ophthalmol Visual Sci 34:2220-2227 (1993).
Hu DN, McCormick SA, Ritch R, Peltonhenrion K: Studies of human uveal melanocytes invitro - isolation, purification and cultivation of human uveal melanocytes. Invest Ophthalmol Visual Sci 34:2210-2219 (1993).
Hunt G, Donatien PD, Cresswell JE, Thody AJ: The effect of α-MSH on the attachment of human melanocytes to laminin and fibronectin - evidence for specific α-MSH receptors on these cells. Ann N Y Acad Sci 680: (1993).
Jha AK, Pandey SS, Gulati AK, Bansal V, Shukla VK, Singh G: Inoculation of a cultured autologous epidermal suspension containing melanocytes in vitiligo. Arch Dermatol 129:785-786 (1993).
Kidson SH, Richards PDG, Rawoot F, Kromberg JGR: An ultrastructural study of melanocytes and melanosomes in the skin and hair bulbs of Rufous albinos. Pigment Cell Res 6:209-214 (1993).
Krasagakis K, Garbe C, Krugerkrasagakes S, Orfanos CE: 12-o-tetradecanoylphorbol-13-acetate not only modulates proliferation rates, but also alters antigen expression and LAK-cell susceptibility of normal human melanocytes invitro. J Invest Dermatol 100:653-659 (1993).
Lepoole IC, Vandenwijngaard RMJGJ, Westerhof W, et al: Phagocytosis by normal human melanocytes invitro. Exp Cell Res 205:388-395 (1993).
Luger TA, Schauer E, Trautinger F, et al: Production of immunosuppressing melanotropins by human keratinocytes. Ann N Y Acad Sci 680: (1993).
Nataf V, Mercier P, Ziller C, Ledouarin NM: Novel markers of melanocyte differentiation in the avian embryo. Exp Cell Res 207:171-182 (1993).
★Rieber M, Rieber MS: Early inhibition of protein phosphatases preferentially blocks phorbol ester-stimulated mitogenic signalling in melanocytes -increase in specific tyrosine phosphoproteins. Biochem Biophys Res Commun 192:483-491 (1993).
Schallreuter KU, Wood JM, Pittelkow MR, Swanson NN, Steinkraus V: Increased invitro expression of β(2)-adrenoceptors in differentiating lesional keratinocytes of vitiligo patients. Arch Dermatol Res 285:216-220 (1993).

★ Searle EA, Austin LM, Boissy YL, Zhao H, Nordlund JJ, Boissy RE: Smyth chicken melanocyte autoantibodies: cross-species recognition, in vivo binding and plasma membrane reactivity of the antiserum. Pigment Cell Res 6:127-133 (1993).

★ Slominski A, Paus R: Melanogenesis is coupled to murine anagen - toward new concepts for the role of melanocytes and the regulation of melanogenesis in hair growth. J Invest Dermatol 101:S90-S97 (1993).

Smit N, LePoole I, Vandewijngaard R, Tigges A, Westerhof W, Das P: Expression of different immunological markers by cultured human melanocytes. Arch Dermatol Res 285:356-365 (1993).

Suzuki S, Katagiri T, Takeuchi T: Macrophages release melanocyte dendrite extension factor in response to ultra-violet ray. In Vitro Cell Dev Biol-Animal 29A:419-426 (1993).

Tezuka T, Saheki M, Kusuda S, Umemoto K: Treatment of nonhairy melanocytic macules by dermabrasion and topical application of 5-percent hydroquinone monobenzyl ether cream. J Am Acad Dermatol 28:771-772 (1993).

Vacca A, Ribatti D, Roncali L, et al: Melanocyte tumor progression is associated with changes in angiogenesis and expression of the 67-kilodalton laminin receptor. Cancer 72:455-461 (1993).

Wilke MS, Vespa J, Skubitz APN, Furcht LT, Mccarthy JB: Human keratinocytes adhere to and spread on synthetic peptide FN-c/h-v derived from fibronectin. J Invest Dermatol 101:43-48 (1993).

MELANOMA & METASTASIS

Aitken JF, Green A, Maclennan R, Jackman L, Martin NG: Comparability of surrogate and self-reported information on melanoma risk factors. Br J Cancer 67:1036-1041 (1993).

Alileche A, Plaisance S, Han DS, et al: Human melanoma cell line m14 secretes a functional interleukin-2. Oncogene 8:1791-1796 (1993).

Allcutt D, Michowiz S, Weitzman S, et al: Primary leptomeningeal melanoma - an unusually aggressive tumor in childhood. Neurosurgery 32:721-729 (1993).

Altomonte M, Gloghini A, Bertola G, et al: Differential expression of cell adhesion molecules CD54/CD11a and CD58/CD2 by human melanoma cells and functional role in their interaction with cytotoxic cells. Cancer Res 53:3343-3348 (1993).

Aubert C, Rouge F, Reillaudou M, Metge P: Establishment and characterization of human ocular melanoma cell lines. Int J Cancer 54:784-792 (1993).

Barberaguillem E, Weiss L: Cancer-cell traffic in the liver .3. Lethal deformation of B16 melanoma cells in liver sinusoids. Int J Cancer 54:880-884 (1993).

Bard DR, Wraight EP, Knight CG: BisMSH-DTPA - a potential imaging agent for malignant melanoma. Ann N Y Acad Sci 680: (1993).

Barnhill RL, Levy MA: Regressing thin cutaneous malignant melanomas (<=1.0 mm) are associated with angiogenesis. Am J Pathol 143:99-104 (1993).

Behl C, Bogdahn U, Winkler J, Apfel R, Brysch W, Schlingensiepen KH: Autoinduction of platelet derived growth factor (PDGF) a- chain messenger RNA expression in a human malignant melanoma cell line and growth inhibitory effects of PDGF-a- chain messenger RNA-specific antisense molecules. Biochem Biophys Res Commun 193:744-751 (1993).

Berthiervergnes O, Zebda N, Bailly M, et al: Expression of peanut agglutinin-binding glycoconjugates in primary melanomas with high risk of metastases. Lancet 341:1292 (1993).

Bertomeu MC, Gallo S, Lauri D, et al: Interleukin 1-induced cancer cell/endothelial cell adhesion invitro and its relationship to metastasis invivo - role of vessel wall 13-HODE synthesis and integrin expression. Clin Exp Metastasis 11:243-250 (1993).

Boothman DA, Meyers M, Fukunaga N, Lee SW: Isolation of Xray-inducible transcripts from radioresistant human melanoma cells. Proc Natl Acad Sci 90:7200-7204 (1993).

Borovansky J: Properties of melanosomes and their exploitation in the diagnosis and treatment of melanoma. Melanoma Res 3:181-186 (1993).

Brady LW, Shields JA, Shields CL, Glennon PT, Hernandez JC: Organ preservation - choroidal melanoma treated by brachytherapy techniques. Organ Conservation in Curative Cancer Treatment 27 (1993).

Campain JA, Padmanabhan R, Hwang J, Gottesman MM, Pastan I: Characterization of an unusual mutant of human melanoma cells resistant to anticancer drugs that inhibit topoisomerase-II. J Cell Physiol 155:414-425 (1993).

Cartei G, Sala PG, Sanzari M, et al: Reduced lymphocyte subpopulations in patients with advanced or disseminated melanoma. J Am Acad Dermatol 28:738-744 (1993).

Chen PW, Ananthaswamy HN: Rejection of K1735 murine melanoma in syngeneic hosts requires expression of MHC class-I antigens and either class-II antigens or IL-2. J Immunol 151:244-255 (1993).

Cristofolini M, Boi S, Girlando S, et al: p53 protein expression in nevi and melanomas. Arch Dermatol 129:739-743 (1993).

Curti BD, Urba WJ, Alvord WG, et al: Interstitial pressure of subcutaneous nodules in melanoma and lymphoma patients - changes during treatment. Cancer Res 53:2204-2207 (1993).

Czarnetzki BM, Macher E, Suciu S, Thomas D, Steerenberg PA, Rumke P: Long-term adjuvant immunotherapy in stage-I high risk malignant melanoma, comparing two BCG preparations versus non-treatment in a randomised multicentre study (EORTC protocol 18781). Eur J Cancer 29A:1237-1242 (1993).

Danen EHJ, Vanmuijen GNP, Vandewielvankemenade E, Jansen KFJ, Ruiter DJ, Figdor CG: Regulation of integrin-mediated adhesion to laminin and collagen in human melanocytes and in non-metastatic and highly metastatic human melanoma cells. Int J Cancer 54:315-321 (1993).

Egan KM, Walsh SM, Seddon JM, Gragoudas ES: An evaluation of the influence of reproductive factors on the risk of metastases from uveal melanoma. Opthalmology 100:1160-1166 (1993).

Elwood JM: Recent developments in melanoma epidemiology, 1993. Melanoma Res 3:149-156 (1993).

Elwood JM, Diffey BL: A consideration of ambient solar ultraviolet radiation in the interpretation of studies of aetiology of melanoma. Melanoma Res 3:113-122 (1993).

Eskenazi AE, Pinkas J, Whitin JC, Arguello F, Cohen HJ, Frantz CN: Role of antioxidant enzymes in the induction of increased experimental metastasis by hydroxyurea. J Nat Cancer Inst 85:711-721 (1993).

Etoh T, Thomas L, Pastellevy C, Colvin RB, Mihm MC, Byers HR: Role of integrin α-2-β (VLA-2) in the migration of human melanoma cells on laminin and type-IV collagen. J Invest Dermatol 100:640-647 (1993).

Faassen AE, Mooradian DL, Tranquillo RT, et al: Cell surface CD44-related chondroitin sulfate proteoglycan is required for transforming growth factor-β-stimulated mouse melanoma cell motility and invasive behavior on type-I collagen. J Cell Sci 105:501-511 (1993).

Ferrone S, Chen ZJ, Liu CC, Hirai S, Kageshita T, Mittelman A: Human high molecular weight melanoma associated antigen mimicry by mouse anti-idiotypic monoclonal antibodies MK2- 23 -experimental studies and clinical trials in patients with malignant melanoma. Pharmacol Ther 57:259-290 (1993).

Fields CG, Mickelson DJ, Drake SL, Mccarthy JB, Fields GB: Melanoma cell adhesion and spreading activities of a synthetic 124-residue triple-helical mini-collagen. J Biol Chem 268:14153-14160 (1993).

Fierro MT, Bertero M, Novelli M, Appino A, Doveil GC, Colonna S, Bernengo MG: Therapy for metastatic melanoma: effective combination of Dacarbazine, Carmustine, Cisplatin and Tamoxifen. Melanoma Res. 3:127-132 (1993).

Fontanesi J, Meyer D, Xu SZ, Tai D: Treatment of choroidal melanoma with I-125 plaque. Int J Radiat Oncol Biol Phys 26:619-623 (1993).

Furlanetto RW, Harwell SE, Baggs RB: Effects of insulin-like growth factor receptor inhibition on human melanomas in culture and in athymic mice. Cancer Res 53:2522-2526 (1993).

Grammatico P, Catricala C, Potenza C, et al: Cytogenic findings in 20 melanomas. Melanoma Res 3:169-172 (1993).

Grammatico P, Scarpa S, Picardo M, Steindl K, Nazzaroporro M, Delporto G: Karyotype modifications in human malignant melanoma cell cultures after treatment with azelaic acid. Mutat Res 300:119-123 (1993).

Green A, Smith P, Mcwhirter W, et al: Melanocytic naevi and melanoma in survivors of childhood cancer. Br J Cancer 67:1053-1057 (1993).

Gutman M, Inbar M, Klausner JM, Chaitchik S: Malignant melanoma in different ethnic groups in Israel -incidence and biologic behavior. Cancer 71:2746-2750 (1993).
Hayashi Y, Hoon DSB, Foshag LJ, Park MS, Terasaki PI, Morton DL: A preclinical model to assess the antigenicity of an HLA-A2 melanoma cell vaccine. Cancer 72:750-759 (1993).
Hungerford J: Uveal melanoma. Eur J Cancer 29A:1365-1368 (1993).
Ihn H, Nakamura K, Abe M, et al: Amelanotic metastatic melanoma in a patient with oculocutaneous albinism. J Am Acad Dermatol 28:895-900 (1993).
Jatoi I, Gore ME: Sex, pregnancy, hormones, and melanoma. Br Med J 307:2-3 (1993).
Jeandel C, Truchetet F, Cuny JF: Malignant melanoma in elderly - epidemiologic, clinical and therapeutic features. Annee Gerontologique : Facts and Research in Gerontolog 7 (1993).
Jemec GBE: Primary prevention of malignant melanoma - to know may not be enough. J Am Acad Dermatol 28:799-800 (1993).
Johnson MR, Look AT, Declue JE, Valentine MB, Lowy DR: Inactivation of the NF1 gene in human melanoma and neuroblastoma cell lines without impaired regulation of GTP.ras. Proc Natl Acad Sci USA 90:5539-5543 (1993).
Kageshita T, Kuriya N, Ono T, et al: Association of high molecular weight melanoma-associated antigen expression in primary acral lentiginous melanoma lesions with poor prognosis. Cancer Res 53:2830-2833 (1993).
Kageshita T, Wang ZG, Calorini L, et al: Selective loss of human leukocyte class-I allospecificities and staining of melanoma cells by monoclonal antibodies recognizing monomorphic determinants of class-I human leukocyte antigens. Cancer Res 53:3349-3354 (1993).
Kawashima I, Ozawa H, Kotani M, Suzuki M, Kawano T, Gomibuchi M, Tai T: Characterization of ganglioside expression in human melanoma cells - immunological and biochemical analysis. J Biochem 114:186-193 (1993).
Keilholz U, Scheibenbogen C, Tilgen W, et al: Interferon-α and interleukin-2 in the treatment of metastatic melanoma - comparison of two phase-II trials. Cancer 72:607-614 (1993).
Kingdom TT, Lalwani AK, Pitts LH: Isolated metastatic melanoma of the cerebellopontine angle -case report. Neurosurgery 33:142-144 (1993).
Kitagawa M, Nemoto T, Seki S, Ito S, Kasuga T: Invivo antimelanoma effects of 4-s-cysteaminylphenol, a newly synthesized therapeutic agent specific to melanoma. J Cancer Res Clin Oncol 119:470-474 (1993).
Klaase JM, Kroon BBR, Vangeel AN, Eggermont AMM, Franklin HR, Vandongen JA: A retrospective comparative study evaluating the results of a single-perfusion versus double-perfusion schedule with melphalan in patients with recurrent melanoma of the lower limb. Cancer 71:2990-2994 (1993).
Kleeberg UR, Engel E, Brocker EB, Avril F, Israels P, Weiss J, Kangas L, van Glabbeke M, Lentz MA: Effects of Toremifene in patients with metastatic melanoma: a phase II study of the EORTC Melanoma Cooperative Group. Melanoma Res. 3:123-126 (1993).
Lassam NJ, From L, Kahn HJ: Overexpression of p53 is a late event in the development of malignant melanoma. Cancer Res 53:2235-2238 (1993).
Lee SM, Margison GP, Woodcock AA, Thatcher N: Sequential administration of varying doses of dacarbazine and fotemustine in advanced malignant melanoma. Br J Cancer 67:1356-1360 (1993).
Lejeune FJ, Ghanem GE: Attempts to use α-melanotropin-containing melphalan in melanoma patients. Ann N Y Acad Sci 680: (1993).
Lienard D, Eggermont AMM, Koops HS, Lejeune FJ: High dose of rTNF-α, rIFN-γ and melphalan in isolation perfusion produce 90-percent complete response in melanoma in transit metastases. Tumor Necrosis Factor : Molecular and Cellular Biology (1993).
Look KY, Roth LM, Sutton GP: Vulvar melanoma reconsidered. Cancer 72:143-146 (1993).
Lu C, Rak JW, Kobayashi H, Kerbel RS: Increased resistance to oncostatin m-induced growth inhibition of human melanoma cell lines derived from advanced-stage lesions. Cancer Res 53:2708-2711 (1993).
Mackensen A, Ferradini L, Carcelain G, et al: Evidence for insitu amplification of cytotoxic T-lymphocytes with antitumor activity in a human regressive melanoma. Cancer Res 53:3569-3573 (1993).

Mackie RM, Mchenry P, Hole D: Accelerated detection with prospective surveillance for cutaneous malignant melanoma in high-risk groups. Lancet 341:1618-1620 (1993).
Maenpaa J, Dooley T, Wurz G, et al: Topical toremifene - a new approach for cutaneous melanoma. Cancer Chemother Pharmacol 32:392-395 (1993).
Matalka KZ, Bailey MQ, Barth RF, et al: Boron neutron capture therapy of intracerebral melanoma using boronophenylalanine as a capture agent. Cancer Res 53:3308-3313 (1993).
Mcgregor JM, Yu CCW, Dublin EA, Barnes DM, Levison DA, Macdonald DM: p53 immunoreactivity in human malignant melanoma and dysplastic naevi. Br J Dermatol 128:606-611 (1993).
Mckeage MJ, Lorentzos A, Gore ME: Tamoxifen and chemotherapy for refractory metastatic malignant melanoma (vol 328, pg 140, 1993). N Engl J Med 328:1571 (1993).
Mclean IW: The biology of haematogenous metastasis in human uveal malignant melanoma. Virchows Arch [A] 422:433-437 (1993).
Mehregan AH, Mehregan DA: Malignant melanoma in childhood. Cancer 71:4096-4103 (1993).
Meisenberg BR, Ross M, Vredenburgh JJ, et al: Randomized trial of high-dose chemotherapy with autologous bone marrow support as adjuvant therapy for high-risk, multi-node-positive malignant melanoma. J Nat Cancer Inst 85:1080-1085 (1993).
Michelot JM, Moreau MFC, Veyre AJ, et al: Phase-II scintigraphic clinical trial of malignant melanoma and metastases with iodine-123-n-(2- diethylaminoethyl 4-iodobenzamide). J Nucl Med 34:1260-1266 (1993).
Mortarine R, Anichini A: From adhesion to signalling: roles of integrins inthe biology of human melanoma. Melanoma Res. 3:87-98 (1993).
Nagelhus TA, Rofstad EK: Expression of the chondroitin sulphate proteoglycan molecular complex in six human melanoma xenograft lines studied by flow cytometry and immunohistochemistry. Melanoma Res 3:187-194 (1993).
Natali PG, Nicotra MR, Bartolazzi A, Cavaliere R, Bigotti A: Integrin expression in cutaneous malignant melanoma -association of the α-3/β-1 heterodimer with tumor progression. Int J Cancer 54:68-72 (1993).
Neades GT, Orr DJA, Hughes LE, Horgan K: Safe margins in the excision of primary cutaneous melanoma. Br J Surg 80:731-733 (1993).
Nelemans PJ, Scholte R, Groenendal H, et al: Melanoma and occupation - results of a case-control study in the Netherlands. Br J Ind Med 50:642-646 (1993).
Nemoto T, Nakamura T, Ohashi K, Kasuga T: N-nitroso-n-ethylurea-induced hamster melanoma - a new method for efficient induction and Schwannian differentiation of melanoma. Jpn J Cancer Res 84(:(1993).
Nishiyama Y, Sugawara K, Tomita K, Yamamoto H, Kamei H, Oki T: Verucopeptin, a new antitumor antibiotic active against B16 melanoma .1. Taxonomy, production, isolation, physico- chemical properties and biological activity. J Antibiot 46:921-927 (1993).
Offner FA, Bigalke I, Schiefer J, et al: Interaction of human malignant melanoma tumor spheroids with endothelium and reconstituted basement membrane - modulation by RGDS. Int J Cancer 54:506-512 (1993).
Ogasawara M, Rosenberg SA: Enhanced expression of HLA molecules and stimulation of autologous human tumor infiltrating lymphocytes following transduction of melanoma cells with γ-interferon genes. Cancer Res 53:3561-3568 (1993).
Oneil BH, Kawakami Y, Restifo NP, Bennink JR, Yewdell JW, Rosenberg SA: Detection of shared MHC-restricted human melanoma antigens after vaccinia virus-mediated transduction of genes coding for HLA. J Immunol 151:1410-1418 (1993).
Oreilly SM, Rustin GJS, Farmer K, Burke M, Hill S, Denekamp J: Flavone acetic acid (FAA) with recombinant interleukin-2 (rIL-2) in advanced malignant melanoma .1. Clinical and vascular studies. Br J Cancer 67:1342-1345 (1993).
Osanto S, Brouwenstyn N, Vaessen N, Figdor CG, Melief CJM, Schrier PI: Immunization with interleukin-2 transfected melanoma cells - a phase-I-II study in patients with metastatic melanoma. Hum Gene Ther 4:323-330 (1993).
Pehamberger H, Binder M, Knollmayer S, Wolff K: Immediate effects of a public education campaign on prognostic features of melanoma. J Am Acad Dermatol 29:106-109 (1993).

Petty EM, Gibson LH, Fountain JW, et al: Molecular definition of a chromosome-9p21 germ-line deletion in a woman with multiple melanomas and a plexiform neurofibroma - Implications for 9p tumor- suppressor gene(s). Am J Hum Genet 53:96-104 (1993).
Ponty E, Favre G, Benaniba R, et al: Biodistribution study of tc-99m-labeled LDL in B16- melanoma-bearing mice - visualization of a preferential uptake by the tumor. Int J Cancer 54:411-417 (1993).
Prezioso JA, Wang N, Duty L, Bloomer WD, Gorelik E: Enhancement of pulmonary metastasis formation and γ-glutamyltranspeptidase activity in b16 melanoma induced by differentiation invitro. Clin Exp Metastasis 11:263-274 (1993).
Qin ZH, Krugerkrasagakes S, Kunzendorf U, Hock H, Diamantstein T, Blankenstein T: Expression of tumor necrosis factor by different tumor cell lines results either in tumor suppression or augmented metastasis. J Exp Med 178:355-360 (1993).
Quivey JM, Char DH, Phillips TL, Weaver KA, Castro JR, Kroll SM: High intensity 125-iodine (i-125) plaque treatment of uveal melanoma. Int J Radiat Oncol Biol Phys 26:613-618 (1993).
Rimoldi D, Romero P, Carrel S: The human melanoma antigen-encoding gene, MAGE-1, is expressed by other tumour cells of neuroectodermal origin such as glioblastomas and neuroblastomas. Int J Cancer 54:527-528 (1993).
Rodriguez Vicente J, Vicente Ortega V, Garcia Serrano F, Garcia Rojo B: Ocular melanoma: an experimental model in New Zealand white rabbits. Melanoma Res 3:195-202 (1993).
Ryan L, Kramar A, Borden E: Prognostic factors in metastatic melanoma. Cancer 71:2995-3005 (1993).
Saarloos MN, Khoo NKS, Lala PK: Effects of histamine type-2 receptor antagonists on indomethacin and IL-2 immunotherapy of metastasis. Clin Exp Metastasis 11:275-283 (1993).
Salomon Y, Zohar M, Dejordy JO, et al: Signaling mechanisms controlled by melanocortins in melanoma, lacrimal, and brain astroglial cells. Ann N Y Acad Sci 680: (1993).
Schadendorf D, Worm M, Czarnetzki BM: Determination of granulocyte/macrophage-colony-stimulating factor secretion by human melanoma cells and its effects on human melanoma cell proliferation. J Cancer Res Clin Oncol 119:501-503 (1993).
Scheibenbogen C, Keilholz U, Meuer S, Dengler T, Tilgen W, Hunstein W: Differential expression and release of LFA-3 and ICAM-1 in human melanoma cell lines. Int J Cancer 54:494-498 (1993).
Seftor REB, Seftor EA, Stetlerstevenson WG, Hendrix MJC: The 72 kDa type-IV collagenase is modulated via differential expression of α-v-β-3-integrin and α-5-β-1-integrin during human melanoma cell invasion. Cancer Res 53:3411-3415 (1993).
Seregard S: Cell proliferation as a prognostic indicator in conjunctival malignant melanoma. Am J Ophthalmol 116:93-97 (1993).
Setlow RB, Grist E, Thompson K, Woodhead AD: Wavelengths effective in induction of malignant melanoma. Proc Natl Acad Sci USA 90:6666-6670 (1993).
Si ZY, Hersey P: Expression of the neuroglandular antigen and analogues in melanoma - CD9 expression appears inversely related to metastatic potential of melanoma. Int J Cancer 54:37-43 (1993).
Sjoberg ER, Varki A: Kinetic and spatial interrelationships between ganglioside glycosyltransferases and o-acetyltransferase(s) in human melanoma cells. J Biol Chem 268:10185-10196 (1993).
Soparker CN, Obrien JM, Albert DM: Investigation of the role of the ras protooncogene point mutation in human uveal melanomas. Invest Ophthalmol Visual Sci 34:2203-2209 (1993).
Sorensen FB, Gamel JW, Mccurdy J: Stereologic estimation of nucleolar volume in ocular melanoma -a comparative study of size estimators with prognostic impact. Hum Pathol 24:513-518 (1993).
Stack MS, Gray RD, Pizzo SV: Modulation of murine-B16F10 melanoma plasminogen activator production by a synthetic peptide derived from the laminin-A chain. Cancer Res 53:1998-2004 (1993).
Sugawara K, Toda S, Moriyama T, Konishi M, Oki T: Verucopeptin, a new antitumor antibiotic active against B16 melanoma .2. Structure determination. J Antibiot 46:928-935 (1993).
Sutherland CM, Mather FJ, Muchmore JH, Carter RD, Reed RJ, Krementz ET: Acral lentiginous melanoma. Am J Surg 166:64-67 (1993).

Tang DG, Onoda JM, Steinert BW, et al: Phenotypic properties of cultured tumor cells - integrin α-IIb-β-3 expression, tumor-cell-induced platelet aggregation, and tumor-cell adhesion to endothelium as important parameters of experimental metastasis. Int J Cancer 54:338-347 (1993).

Tomson DB, Adena M, McLeod, et al: Interferon-α2a does not improve response or survival when combined with dacarbazine in metastatic melanoma: results of a multi-institutional Australian randomized trial. Melanoma Res. 3:133-138 (1993).

Tomlinson IPM, Γck AJ, Stickland JE, et al: Loss of heterozygosity in malignant melanoma at loci on chromosome-11 and chromosome-17 implicated in the pathogenesis of other cancers. Gene Chromosome Cancer 7:169-172 (1993).

Trulla LL, Magistrelli A, Salmona M, Tacconi MT: Effect of cell density on cytotoxicity of ether lipid analogues in variants of b16 murine melanoma. Lipids 28:403-406 (1993).

Valyinagy I, Shih IM, Gyorfi T, et al: Spontaneous and induced differentiation of human melanoma cells. Int J Cancer 54:159-165 (1993).

von Depka Prondzinski M, von Stamm U, Brocker EB: Heterogeneity of the T-cell and macrophage infiltrate in cutaneous and subcutaneous metastases of melanoma patients. Melanoma Res 3:203-208 (1993).

von Stamm U, Brocker EB, von Depka Prondzinski M, et al: Effects of systemic interferon-α (IFN-α) on the antigenic phenotype of melanoma metastases. EORTC melanoma group cooperative study No. 18852. Melanoma Res 3:173-180 (1993).

Weidmann E, Elder EM, Trucco M, Lotze MT, Whiteside TL: Usage of T-cell receptor v-β chain genes in fresh and cultured tumor-infiltrating lymphocytes from human melanoma. Int J Cancer 54:383-390 (1993).

★Weiss J, Schwechheimer K, Cavenee WK, Herlyn M, Arden KC: Mutation and expression of the p53 gene in malignant melanoma cell lines. Int J Cancer 54:693-699 (1993).

Whelchel JC, Farah SE, Mclean IW, Burnier MN: Immunohistochemistry of infiltrating lymphocytes in uveal malignant melanoma. Invest Ophthalmol Visual Sci 34:2603-2606 (1993).

Yamamoto Y, Nakamura H: 1-carboranyl-3-(2-methylaziridino)-2-propanol - synthesis, selective uptake by B-16 melanoma, and selective cytotoxicity toward cancer cells. J Med Chem 36:2232-2234 (1993).

Yang H, Chen ZJ, Kageshita T, Yamada M, Ferrone S: Idiotypic cascade in the human high molecular weight melanoma-associated antigen system - fine specificity and idiotypic profile of anti-anti-idiotypic monoclonal antibodies. Eur J Immunol 23:1671-1677 (1993).

Yang YM, Rutberg SE, Luo FC, et al: A transcriptional inhibitor induced in human melanoma cells upon ultraviolet irradiation. Cell Growth Differ 4:595-602 (1993).

PIGMENT EPITHELIUM

Adamis AP, Shima DT, Yeo KT, et al: Synthesis and secretion of vascular permeability factor/vascular endothelial growth factor by human retinal pigment epithelial cells. Biochem Biophys Res Commun 193:631-638 (1993).

Ball AK, Baldridge WH, Fernback TC: Neuromodulation of pigment movement in the RPE of normal and 6-OHDA-lesioned goldfish retinas. Visual Neurosci 10:529-540 (1993).

Blazynski C: Characterization of adenosine-a2 receptors in bovine retinal pigment epithelial membranes. Exp Eye Res 56:595-599 (1993).

Burke JM, Mckay BS: Invitro aging of bovine and human retinal pigment epithelium -number and activity of the Na/K ATPase pump. Exp Eye Res 57:51-57 (1993).

Chevezbarrios P, Schaffner DL, Barrios R, Overbeek PA, Lebovitz RM, Lieberman MW: Expression of the rast24 oncogene in the ciliary body pigment epithelium and retinal pigment epithelium results in hyperplasia, adenoma, and adenocarcinoma. Am J Pathol 143:20-28 (1993).

Delamere NA, Cocaprados M, Aggarwal S: Studies on regulation of the ascorbic acid transporter in a cell line derived from rabbit non-pigmented ciliary epithelium. Biochim Biophys Acta 1149:102-108 (1993).

Gordon WC, Bazan NG: Visualization of [H-3]docosahexaenoic acid trafficking through photoreceptors and retinal pigment epithelium by electron microscopic autoradiography. Invest Ophthalmol Visual Sci 34:2402-2411 (1993).

Hughes BA, Segawa Y: cAMP-activated chloride currents in amphibian retinal pigment epithelial cells. J Physiol-London 466749-766:(1993).
Immonen I, Siren V, Stephens RW, Liesto K, Vaheri A: Retinoids increase urokinase-type plasminogen activator production by human retinal pigment epithelial cells in culture. Invest Ophthalmol Visual Sci 34:2062-2067 (1993).
Lacour M, Zeuthen T: Osmotic properties of the frog retinal pigment epithelium. Exp Eye Res 56:521-530 (1993).
Lahiri D, Bailey CF: A comparison of phagocytosis by the retinal pigment epithelium in normal and delayed amelanotic chickens. Exp Eye Res 56:625-634 (1993).
Li LX, Sheedlo HJ, Turner JE: Retinal pigment epithelial cell transplants in retinal degeneration slow mice do not rescue photoreceptor cells. Invest Ophthalmol Visual Sci 34:2141-2145 (1993).
Lin LR, Carper D, Yokoyama T, Reddy VN: The effect of hypertonicity on aldose reductase, αb-crystallin, and organic osmolytes in the retinal pigment epithelium. Invest Ophthalmol Visual Sci 34:2352-2359 (1993).
Liversidge J, Mckay D, Mullen G, Forrester JV: Retinal pigment epithelial cells modulate lymphocyte function at the blood-retina barrier by autocrine PGE2 and membrane-bound mechanisms. Cell Immunol 149:315-330 (1993).
Martinalonso JM, Ghosh S, Hernando N, Crabb JW, Cocaprados M: Differential expression of the cellular retinaldehyde- binding protein in bovine ciliary epithelium. Exp Eye Res 56:659-669 (1993).
Matsumoto M, Takagi H, Yoshimura N: Synergistic suppression of retinal pigment epithelial cell proliferation in culture by radiation and hyperthermia. Invest Ophthalmol Visual Sci 34:2068-2073 (1993).
Mattern RM, Zuk A, Hay ED: Retinoic acid inhibits formation of mesenchyme from lens epithelium in collagen gels. Invest Ophthalmol Visual Sci 34:2526-2537 (1993).
Mechtersheimer G, Munk M, Barth T, Koretz K, Moller P: Expression of β-1 integrins in non-neoplastic mammary epithelium, fibroadenoma and carcinoma of the breast. Virchows Arch [A] 422:203-210 (1993).
Rizzolo LJ, Joshi HC: Apical orientation of the microtubule organizing center and associated β-tubulin during the polarization of the retinal pigment epithelium invivo. Dev Biol 157:147-156 (1993).
Rohrer B, Spira AW, Stell WK: Apomorphine blocks form-deprivation myopia in chickens by a dopamine D2-receptor mechanism acting in retina or pigmented epithelium. Visual Neurosci 10:447-453 (1993).
Saari JC, Bredberg DL, Farrell DF: Retinol esterification in bovine retinal pigment epithelium -reversibility of lecithin - retinol acyltransferase. Biochem J 291:697-700 (1993).
Tate DJ, Newsome DA, Oliver PD: Metallothionein shows an age-related decrease in human macular retinal pigment epithelium. Invest Ophthalmol Visual Sci 34:2348-2351 (1993).
Terada T, Nakanuma Y: Expression of α-amylase isoenzymes and trypsin by the proliferating epithelium of large intrahepatic bile ducts and intrahepatic peribiliary glands in hepatolithiasis. Histopathology 22:467-473 (1993).
Wen R, Lui GM, Steinberg RH: Whole-cell K+ currents in fresh and cultured cells of the human and monkey retinal pigment epithelium. J Physiol-London 465121-147:(1993).
Yu HS, Hernandez V, Haywood M, Wong CG: Melatonin inhibits the proliferation of retinal pigment epithelial (RPE) cells invitro. In Vitro Cell Dev Biol-Animal 29A:415-418 (1993).

MSH, GROWTH FACTORS & RECEPTORS

Adamis AP, Shima DT, Yeo KT, et al: Synthesis and secretion of vascular permeability factor/vascular endothelial growth factor by human retinal pigment epithelial cells. Biochem Biophys Res Commun 193:631-638 (1993).
Adams G, Olivier GWJ, Branch SK, Moss SH, Notarianni LJ, Pouton CW: Evidence for the internalization of [I-125-TYR(2), NLE(4), d-PHE(7)]α-MSH following binding to the MSH receptor of B16 murine melanoma cells. Ann N Y Acad Sci 680: (1993).
Asmus SE, Newman SW: Tyrosine hydroxylase neurons in the male hamster chemosensory pathway contain androgen receptors and are influenced by gonadal hormones. J Comp Neurol 331:445-457 (1993).
Baker BI: The role of melanin-concentrating hormone in color change. Ann N Y Acad Sci 680: (1993).

Bar PR, Mandys V, Turecek R, Gispen WH: α-Melanocyte-stimulating hormone has protective properties against the toxic effect of cisplatin on cultured dorsal root ganglia. Ann N Y Acad Sci 680: (1993).

Barker PA, Lomenhoerth C, Gensch EM, Meakin SO, Glass DJ, Shooter EM: Tissue-specific alternative splicing generates 2 isoforms of the trka receptor. J Biol Chem 268:15150-15157 (1993).

Behl C, Bogdahn U, Winkler J, Apfel R, Brysch W, Schlingensiepen KH: Autoinduction of platelet derived growth factor (PDGF) a- chain messenger RNA expression in a human malignant melanoma cell line and growth inhibitory effects of PDGF-a- chain messenger RNA-specific antisense molecules. Biochem Biophys Res Commun 193:744-751 (1993).

Bergasa NV, Vergalla J, Turner ML, Loh PY, Jones EA: α-Melanocyte-stimulating hormone in primary biliary cirrhosis. Ann N Y Acad Sci 680: (1993).

Bittencourt JC, Elias CF: Diencephalic origins of melanin-concentrating hormone immunoreactive projections to medial septum/diagonal band complex and spinal cord using 2 retrograde fluorescent tracers. Ann N Y Acad Sci 680: (1993).

Blasquez C, Jegou S, Fournier A, Bunel DT, Vaudry H: Regulation of neuronal α-melanocyte-stimulating hormone by neuropeptide-y - invitro and invivo studies. Ann N Y Acad Sci 680: (1993).

Blazynski C: Characterization of adenosine-a2 receptors in bovine retinal pigment epithelial membranes. Exp Eye Res 56:595-599 (1993).

Bourguignon JP, Pierard GE, Ernould C, et al: Effects of human growth hormone therapy on melanocytic naevi. Lancet 341:1505-1506 (1993).

Breton C, Schorpp M, Nahon JL: Isolation and characterization of the human melanin-concentrating hormone gene and a variant gene. Mol Brain Res 18:297-310 (1993).

Bunel DT, Conlon JM, Chartrel N, Tonon MC, Vaudry H: Characterization of peptides related to α-melanocyte-stimulating and γ-melanocyte-stimulating hormone from the brain of the frog Rana-ridibunda. Ann N Y Acad Sci 680: (1993).

Burchill SA, Ito S, Thody AJ: Effects of melanocyte-stimulating hormone on tyrosinase expression and melanin synthesis in hair follicular melanocytes of the mouse. J Endocrinol 137:189-195 (1993).

Caballero C, Celis ME: The effect of the blockade of α-melanocyte-stimulating hormone on LH release in the rat. J Endocrinol 137:197-202 (1993).

Catania A, Lipton JM: α-Melanocyte-stimulating hormone peptides in host responses -from basic evidence to human research. Ann N Y Acad Sci 680: (1993).

Chartrel N, Tonon MC, Lamacz M, Vaudry H: Adenosine inhibits α-melanocyte-stimulating hormone release from frog pituitary melanotrophs via an A1 receptor subtype negatively coupled to adenylate cyclase. Ann N Y Acad Sci 680: (1993).

Chronwall BM, Dickerson DS, Sibley DR, Gary KA: Plasticity and ontogeny of melanotrope-d(2a) dopamine receptor messenger RNA and isoform protein expression. Ann N Y Acad Sci 680: (1993).

★Cone RD, Mountjoy KG, Robbins LS, et al: Cloning and functional characterization of a family of receptors for the melanotropic peptides. Ann N Y Acad Sci 680: (1993).

Dekleijn DPV, Linck B, Klein JM, Weidemann WM, Keller R, Vanherp F: Structure and localization of messenger RNA encoding a pigment dispersing hormone (PDH) in the eyestalk of the crayfish orconectes-limosus. FEBS Lett 321:251-255 (1993).

Detapia JC, Eberle AN: D1 dopamine receptor messenger RNA in B16 mouse melanoma cells. Ann N Y Acad Sci 680: (1993).

Dickinson PS, Mecsas C, Hetling J, Terio K: The neuropeptide red pigment concentrating hormone affects rhythmic pattern generation at multiple sites. J Neurophysiol 69:1475-1483 (1993).

Dores RM, Steveson TC, Price ML: A view of the n-acetylation of α-melanocyte- stimulating hormone and β-endorphin from a phylogenetic perspective. Ann N Y Acad Sci 680: (1993).

Drozdz R, Baker BI, Zeller A, Eberle AN: Synthesis and biological activity of highly tritiated rat/human melanin-concentrating hormone. Ann N Y Acad Sci 680: (1993).

Eaton MJ, Moore KE, Lookingland KJ: Differential effects of the d2 receptor agonist quinelorane on the secretion of prolactin and α- melanocyte-stimulating hormone. Life Sci 53:107-112 (1993).

Eberle AN, Siegrist W, Bagutti C, et al: Receptors for melanocyte-stimulating hormone on melanoma cells. Ann N Y Acad Sci 680: (1993).

Fellmann D, Risold PY, Bahjaoui M, et al: Morphofunctional studies on the neurons producing melanin-concentrating hormone. Ann N Y Acad Sci 680: (1993).

Florijn WJ, Mulder AH, Versteeg DHG, Gispen WH: Adrenocorticotropin/α-melanocyte-stimulating hormone (ACTH/MSH)-like peptides modulate adenylate cyclase activity in rat brain slices - evidence for an ACTH/MSH receptor-coupled mechanism. J Neurochem 60:2204-2211 (1993).

★Fuller BB, Rungta D, Iozumi K, et al: Hormonal regulation of melanogenesis in mouse melanoma and in human melanocytes. Ann N Y Acad Sci 680:302-319 (1993).

Furlanetto RW, Harwell SE, Baggs RB: Effects of insulin-like growth factor receptor inhibition on human melanomas in culture and in athymic mice. Cancer Res 53:2522-2526 (1993).

Gantz I, Miwa H, Konda Y, et al: Molecular cloning, expression, and gene localization of a 4th melanocortin receptor. J Biol Chem 268:15174-15179 (1993).

Goureau O, Lepoivre M, Becquet F, Courtois Y: Differential regulation of inducible nitric oxide synthase by fibroblast growth factors and transforming growth factor-β in bovine retinal pigmented epithelial cells - inverse correlation with cellular proliferation. Proc Natl Acad Sci USA 90:4276-4280 (1993).

★Halaban R, Tyrrell L, Longley J, Yarden Y, Rubin J: Pigmentation and proliferation of human melanocytes and the effects of melanocyte-stimulating hormone and ultraviolet B-light. Ann N Y Acad Sci 680:290-301 (1993).

Humphreys MH, Wiedemann E, Valentin JP, Chen XW, Ying WZ: Natriuretic actions of γ-melanocyte-stimulating hormone. Ann N Y Acad Sci 680: (1993).

Hunt G, Donatien PD, Cresswell JE, Thody AJ: The effect of α-MSH on the attachment of human melanocytes to laminin and fibronectin - evidence for specific α-MSH receptors on these cells. Ann N Y Acad Sci 680:549-551 (1993).

Jatoi I, Gore ME: Sex, pregnancy, hormones, and melanoma. Br Med J 307:2-3 (1993).

Jegou S, Blasquez C, Delbende C, Bunel DT, Vaudry H: Regulation of α-melanocyte-stimulating hormone release from hypothalamic neurons. Ann N Y Acad Sci 680: (1993).

Kawauchi H, Naito N, Ono M: Chemistry of melanin-concentrating hormone. Ann N Y Acad Sci 680: (1993).

Lamacz M, Garnier M, Louiset E, Desrues L, Tonon MC, Vaudry H: Nicotine-induced stimulation of α-MSH release in frog pituitary melanotrophs is mediated through a novel type of receptor. Ann N Y Acad Sci 680: (1993).

Lee EJ, Lee BS, Lee HC, Park KH, Song CH, Huh KB: Growth hormone response to l-dopa and pyridostigmine in women with polycystic ovarian syndrome. Fertil Steril 60:53-57 (1993).

Leenders HJ, Dekoning HP, Ponten SP, Jenks BG, Roubos EW: Differential effects of coexisting dopamine, GABA and NPY on α-MSH secretion from melanotrope cells of Xenopus- laevis. Life Sci 52:1969-1975 (1993).

Lunec J, Pieron C, Bal W, MacNeil S, Thody AJ: MSH receptors and function in amelanotic B16 melanoma cells. Melanoma Res 3:99-106 (1993).

Mauri A, Volpe A, Martellotta MC, et al: α-Melanocyte-stimulating hormone during human perinatal life. J Clin Endocrinol Metab 77:113-117 (1993).

Megia A, Herranz L, Luna R, Gomezcandela C, Pallardo F, Gonzalezgancedo P: Protein intake during aggressive calorie restriction in obesity determines growth hormone response to growth hormone-releasing hormone after weight loss. Clin Endocrinol 39:217-220 (1993).

Mette SA, Pilewski J, Buck CA, Albelda SM: Distribution of integrin cell adhesion receptors on normal bronchial epithelial cells and lung cancer cells invitro and invivo. Amer J Respir Cell Molec Biol 8:562-572 (1993).

Miller CL, Hruby VJ, Matsunaga TO, Bickford PC: A-MSH and MCH are functional antagonists in a CNS auditory gating paradigm. Peptides 14:431-440 (1993).

Mouri T, Takahashi K, Kawauchi H, et al: Melanin-concentrating hormone in the human brain. Peptides 14:643-646 (1993).

Nahon JL, Presse F, Breton C, Hervieu G, Schorpp M: Structure and regulation of the melanin-concentrating hormone gene. Ann N Y Acad Sci 680: (1993).

Parkes DG, Vale WW: Contrasting actions of melanin-concentrating hormone and neuropeptide-e-i on posterior pituitary function. Ann N Y Acad Sci 680: (1993).

Paulus W, Baur I, Schuppan D, Roggendorf W: Characterization of integrin receptors in normal and neoplastic human brain. Am J Pathol 143:154-163 (1993).

Presse F, Nahon JL: Differential regulation of melanin-concentrating hormone gene expression in distinct hypothalamic areas under osmotic stimulation in rat. Neuroscience 55:709-720 (1993).

Raffioni S, Bradshaw RA, Buxser SE: The receptors for nerve growth factor and other neurotrophins. Annu Rev Biochem 62823-850:(1993).

Rao KR, Riehm JP: Pigment-dispersing hormones. Ann N Y Acad Sci 680: (1993).

Shafir I, Schmidt-Sole J, Shai E, Salomon Y: The melanocyte-stimulating hormone (MSH) receptor in M2R mouse melanoma tumours: solubilization and properties of the receptor-MSH complex and its covalently crosslinked conjugate. Melanoma Res 3:157-168 (1993).

Silletti S, Raz A: Autocrine motility factor is a growth factor. Biochem Biophys Res Commun 194:446-457 (1993).

★Slominski A, Paus R, Wortsman J: On the potential role of proopiomelanocortin in skin physiology and pathology. Mol Cell Endocrinol 93:C1-C6 (1993).

Solca FF, Chlubadetapia J, Iwata K, Eberle AN: B16-g4f mouse melanoma cells - an MSH receptor-deficient cell clone. FEBS Lett 322:177-180 (1993).

Strand FL, Zuccarelli LA, Williams KA, et al: Melanotropins as growth factors. Ann N Y Acad Sci 680: (1993).

Sulivargha H, Ghanem G, Morandini R, Libert A, Botyanszki J, Medzihradszky K: Receptor binding and cytotoxicity studies with melanotropin fragments containing melphalan. Ann N Y Acad Sci 680: (1993).

Takahashi K, Mouri T, Totsune K, et al: Human melanin-concentrating hormone in the human brain. Ann N Y Acad Sci 680: (1993).

Tatro JB: Melanotropin receptors of the brain. Methods in Neurosciences, Vol 11 11 (1993).

Tatro JB: Brain receptors for central and peripheral melanotropins. Ann N Y Acad Sci 680: (1993).

Thody AJ, Hunt G, Donatien PD, Todd C: Human melanocytes express functional melanocyte- stimulating hormone receptors. Ann N Y Acad Sci 680: (1993).

Thomas P, Wong JG, Lee AK, Almers W: A low affinity Ca2+ receptor controls the final steps in peptide secretion from pituitary melanotrophs. Neuron 11:93-104 (1993).

Vacca A, Ribatti D, Roncali L, et al: Melanocyte tumor progression is associated with changes in angiogenesis and expression of the 67-kilodalton laminin receptor. Cancer 72:455-461 (1993).

Valentijn JA, Vaudry H, Cazin L: Multiple control of calcium channel gating by dopamine-D(2) receptors in frog pituitary melanotrophs. Ann N Y Acad Sci 680: (1993).

Vallarino M, Bunel DT, Delbende C, Vaudry H: Comparative distribution of α-melanocyte-stimulating hormone immunoreactive systems in the brain of fish. Ann N Y Acad Sci 680: (1993).

Vallarino M, Bunel DT, Vaudry H: Location and identification of α-melanocyte- stimulating hormone in the brain of the lungfish, protopterus-annectens. Ann N Y Acad Sci 680: (1993).

Voderholzer U, Laakmann G, Wittmann R, et al: Profiles of spontaneous 24-hour and stimulated growth hormone secretion in male patients with endogenous depression. Psychiatry Res 47:215-227 (1993).

Ying SW, Niles LP, Crocker C: Human malignant melanoma cells express high-affinity receptors for melatonin - antiproliferative effects of melatonin and 6-chloromelatonin. Eur J Pharmacol 246:89-96 (1993).

Zakut R, Perlis R, Eliyahu S, et al: KIT ligand (mast cell growth factor) inhibits the growth of KIT-expressing melanoma cells. Oncogene 8:2221-2229 (1993).

TYROSINASE & TYROSINASE -RELATED PROTEINS, MOLECULAR BIOLOGY

Brichard V, Vanpel A, Wolfel T, et al: The tyrosinase gene codes for an antigen recognized by autologous cytolytic T-lymphocytes on HLA-A2 melanomas. J Exp Med 178:489-495 (1993).

Burchill SA, Ito S, Thody AJ: Effects of melanocyte-stimulating hormone on tyrosinase expression and melanin synthesis in hair follicular melanocytes of the mouse. J Endocrinol 137:189-195 (1993).

Cable J, Jackson IJ, Steel KP: Light (Blt), a mutation that causes melanocyte death, affects stria vascularis function in the mouse inner ear. Pigment Cell Res 6:215-225 (1993).

Chakraborty AK, Chakraborty A, Chakraborty DP: Hydroquinone simultaneously induces indole amine-2,3-dioxygenase (IOD) and inhibits tyrosinase in Bufo-melanostictus. Life Sci 52:1695-1698 (1993).

DelMarmol V, Ito S, Jackson I, Vachtenheim J, Berr P, Ghanem G, Morandini R, Wakamatsu K, Huez G: TRP1 expression correlates with eumelanogenesis in human pigment cells in culture. FEBS Lett 327:307-310 (1993).

Duttlinger R, Manova K, Chu TY, et al: W-sash affects positive and negative elements controlling c-kit expression - ectopic c-kit expression at sites of kit-ligand expression affects melanogenesis. Development 118:705-717 (1993).

Fechner GA, Jacobs JJ, Parsons PG: Inhibition of melanogenesis in human melanoma cells by novel analogues of the parital histamine (H2) agonist nordimaprit. Biochem Pharmacol 46:47-54 (1993).

Fuqua WC, Weiner RM: The mela gene is essential for melanin biosynthesis in the marine bacterium Shewanella colwelliana. J Gen Microbiol 139:1105-1114 (1993).

Furbee JW, Thomas CR, Kelly RS, Malachowski MR: Mediated electrochemical reduction of cytochrome-c and tyrosinase at perfluorosulfonated ionomer coated electrodes. Anal Chem 65:1654-1657 (1993).

Hamel CP, Tsilou E, Pfeffer BA, Hooks JJ, Detrick B, Redmond TM: Molecular cloning and expression of RPE65, a novel retinal pigment epithelium-specific microsomal protein that is post-transcriptionally regulated invitro. J Biol Chem 268:15751-15757 (1993).

Kuzumaki T, Matsuda A, Wakamatsu K, Ito S, Ishikawa K: Eumelanin biosynthesis is regulated by coordinate expression of tyrosinase and tyrosinase-related protein-1 genes. Exp Cell Res 207:33-40 (1993).

Marmaras VJ, Bournazos SN, Katsoris PG, Lambropoulou M: Defense mechanisms in insects - certain integumental proteins and tyrosinase are responsible for nonself-recognition and immobilization of E coli in the cuticle of developing ceratitis capitata. Arch Insect Biochem Physiol 23:169-180 (1993).

★Oetting WS, Stine OC, Townsend D, King RA: Evolution of the tyrosinase related gene (TYRL) in primates. Pigment Cell Res 6:171-177 (1993).

Rauth S, Davidson RL: Suppression of tyrosinase gene expression by bromodeoxyuridine in syrian hamster melanoma cells is not due to its incorporation into upstream or coding sequences of the tyrosinase gene. Somat Cell Mol Genet 19:285-293 (1993).

★Rieber MS, Rieber M: Specific tyrosinases associated with melanoma replicative senescence and melanogenesis. Cancer Res 53:2469-2471 (1993).

Riley PA: Mechanistic aspects of the control of tyrosinase activity. Pigment Cell Res 6:182-185 (1993).

Ros JR, RodriguezLopez JN, GarciaCanovas F: Effect of ferrous ions on the monophenolase activity of tyrosinase. Biochim Biophys Acta 1163:303-308 (1993).

★Urabe K, Aroca P, Hearing VJ: From gene to protein: determination of melanin synthesis. Pigment Cell Res 6:186-192 (1993).

Valverde P, Jiménez-Cervantes C, Salinas C, García-Borrón JC, Solano F, Lozano JA: Preparation of purified tyrosinase devoid of dopachrome tautomerase from mammalian malignant melanocytes. Pigment Cell Res 6:158-164 (1993).

MISCELLANEOUS

Bulengoransby SM, Griffiths CEM, Kimbroughgreen CK, et al: Topical tretinoin (retinoic acid) therapy for hyperpigmented lesions caused by inflammation of the skin in black patients. N Engl J Med 328:1438-1443 (1993).

Campa MJ, Farrell FX, Lapetina EG, Chang KJ: Microinjection of rap2b protein or RNA induces rearrangement of pigment granules in Xenopus oocytes. Biochem J 292:231-236 (1993).

Eldred GE: Age pigment structure. Nature 364:396 (1993).

★Farooqui JZ, Auclair BW, Robb E, Sarkisian E, Cooper C, Alexander JW, Warden G, Boissy RE, Nordlund JJ: Histological, biochemical and ultrastructural studies on hyperpigmented human skin xenografts. Pigment Cell Res 6:226-233 (1993).

Oliphant LW, Hudon J: Pteridines as reflecting pigments and components of reflecting organelles in vertebrates. Pigment Cell Res 6:205-208 (1993).

Satoh T, Yokozeki H, Katayama I, Nishioka K: A new variant of punctate acrokeratoderma associated with a pigmentary disorder. Br J Dermatol 128:693-695 (1993).

Schraermeyer U: Does melanin turnover occur in the eyes of adult vertebrates? Pigment Cell Res 6:293-204 (1993).

Swank RT, Jiang SY, Reddington M, et al: Inherited abnormalities in platelet organelles and platelet formation and associated altered expression of low molecular weight guanosine triphosphate-binding proteins in the mouse pigment mutant gunmetal. Blood 81:2626-2635 (1993).