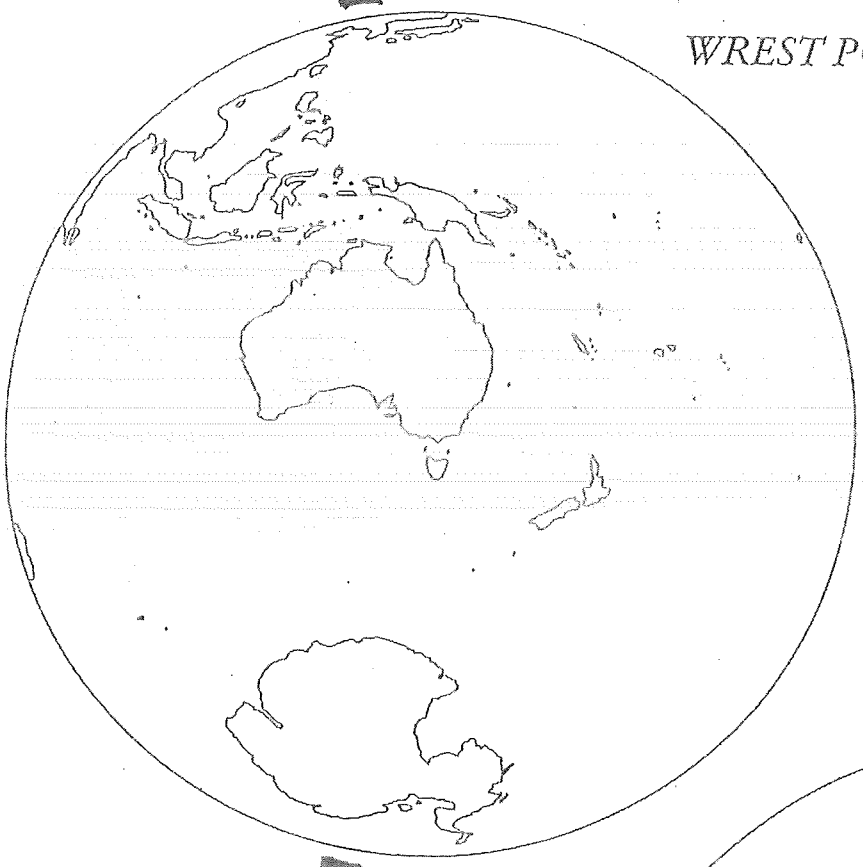
XIth SYMPOSIUM OF THE INTERNATIONAL SOCIETY FOR GENETIC EYE DISEASE & VIIIth SYMPOSIUM OF THE RETINOBLASTOMA SOCIETY

MARCH 10 - 14, 1996

WREST POINT CONVENTION CENTRE
HOBART, TASMANIA
AUSTRALIA



G'DAY

WELCOME TO TASMANIA FOR THE 1996 SYMPOSIA OF

THE INTERNATIONAL SOCIETY FOR GENETIC EYE DISEASE

& THE RETINOBLASTOMA SOCIETY

We are delighted to have so many delegates who have travelled so far to attend the meeting. While you are here we hope to show you some relaxed Australian hospitality. Tasmania has a long history of research into genetic eye disease, with **J. B. Hamilton compiling every pedigree of every eye disease in his Hobart practice. This was published in the British Journal of Ophthalmology in 1938 (Brit J Ophthal 1938, 22:19-137). Even today we are studying families he identified over 60 years ago. He was also responsible for the Bligh (of the bounty) Museum on Bruny Island. The conference outing to Port Arthur similarly blends sightseeing history and genetic research. We hope you feel free to explore Hobart and travel further afield in Tasmania and the rest of Australia.**

DAVID MACKEY on behalf of the organisers

FRANK BILLSON (NSW)
ROBERT BUTTERY (TAS & VIC)
DEB COLVILLE (VIC)
JAMES ELDER (VIC)
MAREE FLAHERTY (NSW)
MICHAEL GIBLIN (NSW)
WILLIAM GLASSON (QLD)
JOHN GRIGG (NSW)
PAUL MCCARTNEY (TAS)
JOHN MCKENZIE (VIC)

SOCIAL PROGRAM FOR DELEGATES

SUNDAY 10 MARCH

4.00 PM - 9.00 PM
REGISTRATION AT WREST POINT CONVENTION CENTRE

7.00 PM - 9.00 PM
COCKTAIL RECEPTION at WREST POINT CONVENTION CENTRE

MONDAY 11 MARCH

MORNING & AFTERNOON TEA AND LUNCH PROVIDED

TUESDAY 12 MARCH
WITH ACCOMPANYING PERSONS

DAY TRIP TO TASMAN PENINSULA AND PORT ARTHUR HISTORIC SITE
BUSES DEPART FROM WREST POINT CONVENTION CENTRE AND GRAND CHANCELLOR AT 8AM

MORNING AFTERNOON TEA, LUNCH AND DINNER PROVIDED

WEDNESDAY 13 MARCH

MORNING & AFTERNOON TEA AND LUNCH PROVIDED

7.30 PM CONFERENCE DINNER AT WREST POINT CONVENTION CENTRE

THURSDAY 14 MARCH

MORNING TEA PROVIDED

THURSDAY AFTERNOON ACTIVITIES, INCLUDING:
BICYCLE RIDES DOWN MOUNT WELLINGTON
SAILING ON THE RIVER

NUMBERS ARE LIMITED SO PLEASE CONTACT THE MURES CONVENTION MANAGEMENT DESK IF YOU WOULD LIKE TO PARTICIPATE.

VENUE

Wrest Point Convention Centre 410 Sandy Bay Road., Sandy Bay 7005
Telephone: (002) 21 1720 or 21 1721 Fax: (002) 21 1722

REGISTRATION AND INFORMATION DESK

The registration desk is located in the foyer of the Convention centre and the staff of Mures Convention Management will be at the desk to assist you with any problems between the following times:

Sunday 10th March	4.00 pm - 9.00 pm
Monday 11th March	8.00 am - 5.30 pm
Tuesday 12th March	Port Arthur Full Day Trip
Wednesday 13th March	8.30 am - 5.30 pm
Thursday 14th March	8:30 am - 1:00 pm

NAME BADGES

Each delegate to the conference will receive a name badge on registration. The badge is your official pass and must be worn to obtain entry to all sessions, morning and afternoon teas and lunches. Tickets will be issued for the Conference Dinner and delegates will need to present these at the door to gain entrance.

MORNING AND AFTERNOON TEAS AND LUNCHES

Morning and afternoon teas and lunch are served in the foyer of the Convention Centre.

SPEAKER PREPARATION AREA

Slides and overheads may be prepared in the speakers room located near the side entrance to the Plenary Hall. The room is often locked so please check at the Registration Desk for the key.

MESSAGES

Messages can be collected and left at the registration desk. All messages will be posted on the message board, near the registration desk.

BANKING

Full banking services are available in the heart of the Sandy Bay shopping centre, a two minute taxi ride from the Wrest Point Convention Centre. Banks represented include the Commonwealth, ANZ, Westpac, and Trust Banks. In addition, there are limited card withdrawal terminals in the foyer of Wrest Point Hotel Casino near the Porters Desk.

SHOPPING

Sandy Bay shopping centre is closet area, two minutes by taxi from Wrest Point. There are quality shops in this area in Magnet Court and Mayfair in the Bay: Ladies and Gents fashions, Chemists, Shoes, Hairdressers, Deli, Gift Shops, Bakery, M.B.F., Books-cards-newsagent, and the banks.

POST OFFICE

Corner of King Street and Sandy Bay Road in Sandy Bay.

EMERGENCIES

DOCTORS:

Sandy Bay Clinic, 270 Sandy Bay Road, Sandy Bay Ph. 23 6822

MEDICAL SERVICES:

Royal Hobart Hospital (Public), 48 Liverpool St. Ph. 38 8308
St Helens Hospital Casualty (Private) - 24hr
186 Macquarie St Ph. 21 3636

DENTISTS:

Dr Ian Gurner Ph. 24 3636
Dr John Austwick Ph. 23 5620

TAXI CAB SERVICES:

Taxi Combined (Cabcharge) Ph. 34 8444
City Cabs Ph. 34 3633

METROPOLITAN TRANSPORT TRUST BUS SERVICES:

Churchill Ave. - City Service 52, approximate 30 minute intervals
Sandy Bay Road - City Services 54/55/56 approximate 15 minute intervals

INTER-CITY COACHES

Hobart Coaches, 4 Liverpool Street Ph. 34 4077
Tasmanian Redline Coaches, 199 Collins Street Ph. 31 3233

SUNDAY, 10 MARCH, 1996

A Welcome reception will be held in the Wrest Point Convention Centre foyer on Sunday evening from 7.00pm until 9.00pm. Drinks and "nibbles" will be served during the evening to allow delegates to meet and register before the technical program begins.

TUESDAY, 12 MARCH, 1996

A trip to Tasmania without visiting Port Arthur is gaolable!! A full day tour has been organised for you to see our historic penitentiary, sample some Tasmanian cuisine, and get to view our famous Tasmanian Devil. Visits to the Bush Mill and Tasmanian Devil Park, as well as the Ghost Tour are included. A symposium will be conducted within the ruins on "The use of historic records in Genetic Research."

WEDNESDAY, 13 MARCH, 1996

The Conference Dinner will be held on Wednesday 13th December, in the Exhibition Foyer of Wrest Point Hotel Casino, at 7.30pm. Formal dress is NOT required, however the Casino asks for neat casual dress.

THURSDAY, 14 MARCH, 1996

With the Conference concluding at 12:30 optional activities have been organised. Numbers are limited to 20 people for a bike ride down to historic Salamanca Place from the pinnacle of Mt Wellington. Bookings can be made for both tours at the Conference Registration Desk.

RESTAURANTS

GENERAL		
Ball and Chain, Charcoal Grill, Salamanca Place	Mon - Sun	23 2655
Battery Point Brasserie, 59 Hampden Rd	Mon - Sat	23 3186
Sullivan's Fine Dining, Grand Chancellor, 1 Davey St	Tue - Sat	35 4535
The Astor Grill, 157 Macquarie St	Mon - Sun	34 3809
CHINESE		
Ming Court, 636a Sandy Bay Rd	Mon - Sun	25 3107
Flourishing Court, 252 - 256 Macquarie St	Tue - Fri	23 2559
FRENCH		
The Paris Restaurant, 365 Macquarie St	Tue - Sat	23 5028
Panache, 89 Salamanca Place	Mon - Sun	24 2929
Le Provencial, 417 Macquarie St	Tue - Sat	24 2526
INDIAN		
Round Asia, 182 Goulburn St	Wed - Sat	34 9385
INDONESIAN		
Little Bali, 84a Harrington Rd	Mon - Sun	34 3426
ITALIAN		
Don Camillo, Magnet Court, Sandy Bay	Mon - Sat	34 1006
Etna Pizza House, 201 Elizabeth St	Mon - Sun	34 4105
Marti Zucco's, 364 Macquarie St	Mon - Sun	34 9611
Riviera Ristorante, 15 Hunter St	Mon - Sat	34 3230
Solo Pasta and Pizza, 50B King St, Sandy Bay	Mon - Sat	34 9898
Tarantella Italian, 16A Princes Street, Sandy Bay	Mon - Sat	23 6652
JAPANESE		
Orizuru Sushi Bar, Mures, Victoria Dock	Mon - Sat	31 1790
KOREAN		
Seoul Korean Restaurant, Cnr Harrington & Collins	Mon - Sat	34 7090
MEXICAN		
Taco Bill Mexican Restaurant, 41 Hampden Rd	Tue - Sun	23 5297
Amigos, 329 Elizabeth St	Mon - Sun	34 6115
SEAFOOD		
Mures Fish Centre, Victoria Dock		
- Mures Lower Deck (Bistro)	Mon - Sun	31 2121
- Mures Upper Deck (à la carte)	Mon - Sun	31 1999
Drunken Admiral, 17 Hunter St	Mon - Sun	34 1903
Prossers, Beach Rd Long Point, Sandy Bay	Mon - Sun	25 2276
THAI		
Thai Hut, 80 Elizabeth St	Tue - Sat	34 4914
Vanidol's Asian Cuisine, 353 Elizabeth St	Tue - Sun	34 9307
LEBANESE		
Ali Akbar, 321 Elizabeth St	Mon - Sat	31 1770
SPANISH		
Sisco's, 121 Macquarie St	Tue - Sat	23 2059

MONDAY 11 MARCH EARLY MORNING SESSION

8.30
WELCOME AND OPENING REMARKS **CHAIR DAVID MACKEY**

8.35 (Pg 19)
EFFICIENT IDENTIFICATION OF GENETIC DISEASE LOCI
Val C. Sheffield and Edwin M. Stone.
The Departments of Pediatrics and Ophthalmology, University of Iowa, Iowa City, Iowa, U.S.A.

9.00 (Pg 20)
CLASSIFICATION OF MACULAR DYSTROPHIES REVISITED
J. Grigg,
Department of Ophthalmology and Eye Health Institute, The University of Sydney, Sydney, New South Wales, Australia

9.10 (Pg 21)
AGE-RELATED MACULAR DEGENERATION: A GENETIC-EPIDEMIOLOGICAL APPROACH.
C.W. Klaver[1,2], R.C.W. Wolfs[1,2], J.R. Vingerling[1,2], C.M. van Duyn[2], A. Hofman[2], P.T.V.M. de Jong[1,3]
[1] Department of Ophthalmology, Erasmus University Medical School, Rotterdam, [2] Department of Epidemiology & Biostatistics, Erasmus University Medical School, Rotterdam, [3] Netherlands Ophthalmic Research Institute, Amsterdam.

9.20
DISCUSSION

9.30 (Pg 22)
MOLECULAR VS CONVENTIONAL SCREENING FOR RB1 MUTATIONS.
B. L. Gallie[1], H. Z. Noorani[1], H. N. Khan[1], A. S. Detsky[2].
[1]Departments of Ophthalmology, Molecular and Medical Genetics, and [2]Health Administration and Medicine, University of Toronto, Toronto, Canada.

9.40 (Pg 23)
RETINOBLASTOMA GENE (RB1) MUTATION IDENTIFICATION BY FRAGMENT ANALYSIS.
J. Sutherland[1,3], D. Rushlow[3], L. Han[1], M. Hui[3], S. Liu[2], J. Zamora[3], J. Dunn[3], B. L. Gallie[1,2,3].
[1]Hospital for Sick Children, and [2]The Eye Research Institute of Canada, University of Toronto; and [3]Visible Genetics Inc., Toronto, Ontario, Canada.

9.50
DISCUSSION

10.00
MORNING TEA

MONDAY 11 MARCH LATE MORNING SESSION

CHAIR JOHN GRIGG

10.20
LUCIENNE LYONS ALLERGAN

10.30 (Pg 24)
GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) IX: RANKING GLAUCOMA FOR LINKAGE STUDIES.
M.A. Coote[1], P.J. McCartney[2], R.M. Wilkinson[2], D.A. Mackey[1,2].
University of Melbourne[1], University of Tasmania[2], Australia.

10.40 (Pg 25)
THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. I. OVERVIEW.
D.A.Mackey[1,2], D.G.Platts[1], J.L.Rait[2], P.J.McCartney[1], M.A.Coote[2], R.G.Buttery[1], R.M.Wilkinson[1], J.M.Barbour[1], J.Sack[2], R.L.Cooper[1], C Green[1], CH Wilkinson[1], M.,Rivers[2], J.Lynch[2], M.Ring[1], V.Litchfield[1], C Cirillo[1].
University of Tasmania[1], University of Melbourne, Australia.[2]

10.50 (Pg 26)
FAMILY AGGREGATION OF PRIMARY OPEN-ANGLE GLAUCOMA: PRESENTATION OF STUDY DESIGN AND INTERIM ANALYSES.
R.C.W. Wolfs, MD.
Erasmus University, Rotterdam, The Netherlands

11.00
DISCUSSION

11.10 (Pg 27)
THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. II-IV THE PHENOTYPE OF THE GLAUCOMA PEDIGREES GTAS1, GTAS2 GTAS6 AND GVIC1.
P.J.McCartney[1],M.A.Coote[2], J.M.Barbour[1] R.M.Wilkinson[1] C.H.Wilkinson[1] J.L.Rait[2], R.G.Buttery[1], M.Rivers[1] J.Lynch[2], J.Sack[1], D.G.Platts[1] K.A.S. Sindhu[1], R.L. Cooper[1], C.M. Green[1],D.A.Mackey[12].
University of Tasmania[1] University of Melbourne, Australia[2].

11.20
DISCUSSION

11.30 (Pg 28)
ATTITUDES TOWARDS PREDICTIVE TESTING FOR RETINITIS PIGMENTOSA (RP).
AV Levin, R Babul, R Wise, L DaSilva, C Shuman, M Rowell, M Chipman.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

11.40 (Pg 29)
GILLESPIE SYNDROME.
Maree Flaherty[1] , John Nelson[2] and Padraic Grattan-Smith[1].
(All authors previously at Westmead Hospital, Sydney. Currently: New Children's Hospital, Sydney[1]; King Edward Memorial Hospital for Women, Perth[2]).

11.50 (Pg 30)
AUTOSOMAL DOMINANT IRIDOGONIODYSGENESIS AND AXENFELD-RIEGER SYNDROME ARE GENETICALLY DISTINCT.
MA Walter, F Mirzayans, K Hickey, AJ Mears, WG Pearce.
Department of Ophthalmology, University of Alberta, Edmonton, Alberta, Canada.

12.00
DISCUSSION

12.10 (Pg 57)
CARUNCLE ABNORMALITIES IN OCULO-AURICULO-VERTEBRAL SPECTRUM (OAV).
N Nijhawan, J Siegel-Bartelt, AV Levin.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

12.20 (Pg 32)
OCULAR MANIFESTATIONS OF CORNELIA DE LANGE SYNDROME.
AV Levin, J.H. Shin
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada

12.30
DISCUSSION

12.40
LUNCH

MONDAY 11 MARCH

EARLY AFTERNOON SESSION

CHAIR WILLIAM GLASSON

RETINOBLASTOMA

1.30 (Pg 33)
RETINOBLASTOMA IN PAPUA NEW GUINEA.
Nitin VERMA.
Boroko, Papua New Guinea.

1.40 (Pg 34)
RETINOBLASTOMA (RB) IN BRAZIL: A DISTINCT SUBTYPE OF DISEASE.
Antoneli CBG, Marceno SR, Erwenne C, Morini S, Novae PE, Bianchi A.
A.C. Camargo Hospital-Antonio Prudente Foundation, Sao Paulo, Brazil.

1.50 (Pg 35)
THE ROYAL CHILDREN'S HOSPITAL RETINOBLASTOMA EXPERIENCE
Susan Carden, John McKenzie, James Elder, David Mackey, Sandra Staffieri
Department of Ophthalmology , Royal Children's Hospital, Melbourne

2.00
DISCUSSION

2.10 (Pg 36)
THE ROYAL CHILDREN'S HOSPITAL RETINOBLASTOMA EXPERIENCE: OCULAR TREATMENT
John McKenzie, Sandra Staffieri, James Elder, David Mackey, Susan Carden
Department of Ophthalmology, Royal Children's Hospital, Melbourne

2.20 (Pg 37)
RETINOBLASTOMA:
F.A. Billson, J. Grigg, K. Ramaesh, M. Conway, M. Madigan
Department of Ophthalmology and Eye Health Institute, The University of Sydney, Sydney, New South Wales, Australia

2.30 (Pg 38)
BILATERAL EYE PRESERVATION OF BILATERAL RETINOBLASTOMA.
A Kaneko[1], M Moori[2].
[1]National Cancer Center Hospital, Tokyo, Japan; [2]Tokai University School of Medicine, Ischara-City, Japan.

2.40 (Pg 39)
PRIMARY METHODS OF MANAGEMENT IN RETINOBLASTOMA: RETINOBLASTOMA INTERNATIONAL COLLABORATIVE STUDY REPORT 3.
James J. Augsburger[1], Michael Giblin[2], Markus Kleineidam[1], The RICS Group[3].
[1]Oncology Unit, Retina Service, Wills Eye Hospital, Jefferson College, Philadelphia, Pennsylvania, USA; [2]New Children's Hospital, Sydney, New South Wales, Australia; [3]Other clinical centres listed at the conclusion of this manuscript.

2.50
DISCUSSION

3.00
AFTERNOON TEA

MONDAY 11 MARCH LATE AFTERNOON SESSION

CHAIR JOHN MCKENZIE

RETINOBLASTOMA

3.30 (Pg 40)
CHEMOTHERAPY AS PRIMARY TREATMENT OF INTRAOCULAR RETINOBLASTOMA.
A.L. Murphree, J. Sato, M. Malagolowkin, J. Villablanca.
Childrens Hospital Los Angeles and the University of Southern California, Los Angeles, United States of America

3.40 (Pg 41)
CHEMOTHERAPY CAN REPLACE RADIATION FOR INTRAOCULAR RETINOBLASTOMA.
BL Gallie[1], A Budning[1], G Koren[3], Victor LingY, HSL Chan[2].
Departments of Ophthalmology[1], Oncology[2], and Pharmacology and Toxicology[3], Hospital for Sick Children, University of Toronto, Toronto, Canada; and British Columbia Cancer Agency, University of British Columbia, Vancouver, Canada.

3.50
DISCUSSION

4.00 (Pg 42)
PRIMARY CHEMOTHERAPY IN GENETIC RETINOBLASTOMA.
Kingston JE, Hungerford JL, Bristow A, Plowman PN.
Saint Bartholomew's Hospital, London, UK

4.10 (Pg 43)
EFFICACY AND TOXICITY OF NEOADJUVANT CHEMOTHERAPY (CT) USING ETOPOSIDE (VP16) AND CARBOPLATIN IN 20 PATIENTS (PTS) WITH INTRAOCULAR RETINOBLASTOMA (IORB).
F. Doz, L. Desjardins, E. Quintana, C. Levy, J-M. Zucker.
Institut Curie, Paris, France.

4.20
DISCUSSION

4.30 (Pg 44)
PRESENTATION OF RETINOBLASTOMA AS PHTHISIS BULBI.
ZA Karcioglu, PB Mullaney, SA Al-Mesfer, EB Abboud.
King Khaled Eye Specialist Hospital, Riyadh, Kingdom of Saudi Arabia.

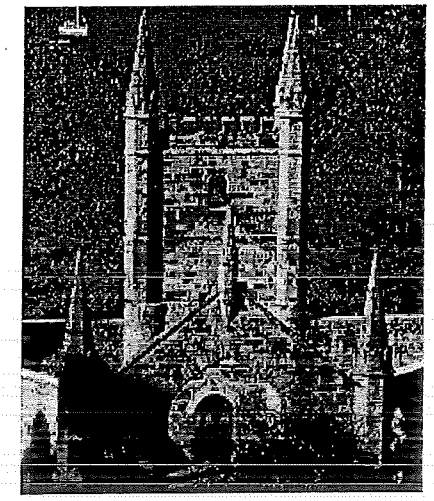
4.40 (Pg 45)
THE RETINOBLASTOMA FAMILY ASSOCIATION
Lisa McCarthy, H. McQuigge, S. Croft, A. Bacopolis, Dr. B. Gallie, B. McCarthy
Retinoblastoma Family Association, Ontario, Canada

4.50
DISCUSSION

5.00
CLOSE

TUESDAY 12 MARCH EARLY AFTERNOON SESSION

DAY OUTING TO THE TASMAN PENINSULA AND PORT ARTHUR HISTORIC SITE
BUSES LEAVE FROM WREST POINT AND GRAND CHANCELLOR AT 8.00 AM



VISIT	COASTAL SCENERY ON TASMAN PENINSULA	
9.45	TASMANIAN DEVIL WILDLIFE PARK	
10.45	PORT ARTHUR HISTORIC SITE	
11.00	MORNING TEA FRANCES LANGFORD TEA ROOMS	

DIVIDE INTO TWO GROUPS

A		
11.30	GROUP A	LECTURE IN RUINS (SEE BELOW)
12.30 PM	GROUP A	LUNCH AT FRANCES LANGFORD TEA ROOMS
1.30PM	GROUP A	GUIDED TOUR PORT ARTHUR HISTORIC SITE
2.30PM	GROUP A	HARBOUR CRUISE
B		
11.30	GROUP B	GUIDED TOUR PORT ARTHUR HISTORIC SITE
1.00 PM	GROUP B	HARBOUR CRUISE
1.30PM	GROUP B	LUNCH AT FRANCES LANGFORD TEA ROOMS
2.30PM	GROUP B	LECTURE IN RUINS (SEE BELOW)
3.30	ALL	AFTERNOON TEA AT FRANCES LANGFORD TEA ROOMS

4.00 TO BUSH MILL TOUR

5.00 REMARKABLE CAVE TOUR

6.00 BUS TO DINNER WITH A BUSH BAND AT CASCADES, KOONYA

9.00 BUSES RETURN TO HOBART OR PORT ARTHUR GHOST TOUR

10.30 LATE BUS LEAVES FOR HOBART

LECTURES IN THE RUINS AT PORT ARTHUR:

11.30 AND REPEATED AT 2.30 (FOR ONE HOUR)

THE USE OF HISTORIC RECORDS IN GENETIC RESEARCH
David Mackey
Maree Ring
Elise Heon
Other Speakers

WEDNESDAY 13 MARCH EARLY MORNING SESSION

CHAIR ROBERT BUTTERY

8.30
FRANCESCHETTI LECTURE

HEREDITARY RETINAL DYSTROPHIES
Alan C Bird

GENETICS

9.15 (Pg 48)
PHENOTYPIC DIFFERENCES BETWEEN RP2 AND RP3, DO THEY EXIST
Christina Flaxel, Alan Bird
Moorfields Eye Hospital, LONDON;

9.25 (Pg 49)
OCULAR ABNORMALITIES IN THIN BASEMENT MEMBRANE DISEASE (TBMD).
Deb Colville MBBS, FRACO, Grad Dip Epi[1,2], Judy Savige MB FRACP[2], Pauline Branley MB FRACP[2], Diane Wilson MB FRACP[2].
Royal Children's Hospital, Melbourne [1], University of Melbourne, Austin & Repatriation Medical Centre, Victoria[2]

9.35 (Pg 50)
EFFECT OF AGE IN INTERPRETING THE ELECTRORETINOGRAM.
CA Westall[1,2], CM Panton[1], AV Levin[1,2]
[1]Department of Ophthalmology, Hospital for Sick Children; [2]University of Toronto; Toronto, Ontario, Canada.

9.45
DISCUSSION

10.00
MORNING TEA

WEDNESDAY 13 MARCH LATE MORNING SESSION

CHAIR DEB COLVILLE

GENETICS

10.30 (Pg 51)
SPIELMEYER-VOGT DISEASE.
S. Merin.
Department of Ophthalmology, Hadassah University Hospital, Jerusalem, Israel.

10.40 (Pg 52)
ALSTRÖM SYNDROME: A REVIEW OF CLINICAL FEATURES.
I Russell-Eggitt[1], P Clayton[1], B Coffey[1], A Kriss[1], A Moore[2], M Pembrey[1], W Reardon[1], D Taylor[1], J Taylor[1]
[1]Great Ormond Street Hospital for Children, London UK, [2]Addenbrookes Hospital, Cambridge and Moorfields Eye Hospital, London UK.

10.50
DISCUSSION

11.00 (Pg 53)
FABRY DISEASE - CLINICAL, MOLECULAR AND COUNSELLING CORRELATES.
R.V. Jamieson[1], M. Flaherty[2], C.P. Morris[3], P.V. Nelson[3], M. Smith[1], M. Wilson[1] and W.F. Carey[3].
Departments of Medical Genetics[1] & Ophthalmology[2], The New Children's Hospital, Sydney, NSW, Australia and Department of Chemical Pathology[3], Women's and Children's Hospital, Adelaide, SA, Australia.

11.10 (Pg 54)
AUTOSOMAL RECESSIVE INHERITANCE OF HALLERMANN-STREIFF SYNDROME.
Johan Zwaan.
King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia.

11.20 (Pg 55)
A NEW SYNDROME WITH UNUSUAL CRANIOFACIAL ANOMALIES AND Y-SUTURE CATARACTS.
Johan Zwaan.
King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia.

11.30
DISCUSSION

11.40 (Pg 56)
CLINICAL EVALUATION OF ACCOMPANYING OCULAR AND SYSTEMIC ANOMALIES IN CHARGE ASSOCIATION.
Eiji Tsumoto, Hironori Ozeki, Akio Majima.
Department of Ophthalmology, Nagoya City University Medical School, Nagoya, Japan.

11.50 (Pg 31)
LINKAGE OF A GENE FOR MACULAR CORNEAL DYSTROPHY TO LONG ARM OF CHROMOSOME 16 (16q22).
G.K. Klintworth[1,3], F. Jonasson[5], F. Lennon[4], J. Sarrica[4], J. Stauffer[4], K.F. Damji[1], M.A. Pericak-Vance[1,2,4] and J.M. Vance[2,4].
Departments of Ophthalmology[1], Genetics[2], and Pathology[3] and Division of Neurology[4], Duke University, Durham, NC; University Department of Ophthalmology, Landakot Hospital, Reykjavik, Iceland[5].

12.00 (Pg 58)
GEOGRAPHIC AND GENETIC MAPPING OF A GENE FOR MICROPHTHALMIA, CATARACTS AND DWARFISM IN PATIENTS FROM ISOLATED COMMUNITIES ON THE SOUTH COAST OF NEWFOUNDLAND.
Jane Green[1], Mary O'Driscoll[1], Inge de Becker[2], Ban Younghusband[1].
[1]Faculty of Medicine, Memorial University, St John's, NF, Canada; [2]Izaak Walton Killam Hospital, Halifax, NS, Canada.

12.10
DISCUSSION

12.20
LUNCH

WEDNESDAY 13 MARCH EARLY AFTERNOON SESSION

CHAIR MICHAEL GIBLIN

RETINOBLASTOMA

1.30 (Pg 59)
THE RETURN OF PHOTOSENSITISERS AND RED LIGHT AS A TREATMENT MODALITY FOR SMALL PRIMARY OR RECURRENT RETINOBLASTOMAS.
A.L. Murphree, J. Levy, C.J.Gomer.
Childrens Hospital Los Angeles and the University of Southern California, Los Angeles and QLT PhotoTherapeutics Inc., Vancouver, British Columbia.

1.40 (Pg 60)
NEW CONCEPTS IN THE MANAGEMENT OF RETINOBLASTOMA.
L. Desjardins, F. Doz, C. Levy, E. Quintana, J.M. Zucker, P. Validire, P. Schlienger.
Institut Curie, Paris, France.

1.50 (Pg 61)
TREATMENT OF RETINOBLASTOMA VITREOUS BASE SEEDING
Steven A. Madreperla, MD, PhD,[1,4] John L. Hungerford, FRCS, FRCOphth,[1] David Doughty MSc,[2] P. Nicholas Plowman, MD, FRCP, FRCR,[2] Judith E. Kingston, FRCP,[3] Arun D. Singh, FRCOPTH[1]
Departments of [1]Ocular Oncology, [2]Radiotherapy, [3]Pediatric Oncology, St. Bartholomew's Hospital London, England
[4]Department of Ophthalmology, University Hospitals Cleveland, Ohio, USA.

2.00
DISCUSSION

2.10 (Pg 62)
RETINOBLASTOMA IN TWINS.
ZA Karcioglu, SA Al-Mesfer, PB Mullaney, SH Senft.
King Khaled Eye Specialist Hospital, Riyadh, Kingdom of Saudi Arabia.

2.20 (Pg 63)
LARGE IN-FRAME DELETION IN RB1 IN A LOW PENETRANCE FAMILY.
BL Gallie, D Du, JM Dunn, R Bremner.
Department of Ophthalmology and The Eye Research Institute of Canada, University of Toronto, Toronto, Canada.

2.30
DISCUSSION

2.40
AFTERNOON TEA

WEDNESDAY 13 MARCH LATE AFTERNOON SESSION

CHAIR FRANK BILLSON

RETINOBLASTOMA

3.10 (Pg 64)
INTRAOCULAR RETINOBLASTOMA: SYSTEMIC CHEMOTHERAPY WITH CARBO + VP16 +VCR.
Clelia M Erwenne, Celia G Antoneli, Renate F de Souza, Sung Bok Cha, Martha M M Chojniak.
A.C. Camargo Hospital-Antonio Prudente Foundation, Sao Paulo, Brazil.

3.20 (Pg 65)
TREATMENT OF ADVERSE HISTOLOGY FOLLOWING ENUCLEATION FOR RETINOBLASTOMA.
Hungerford JL, Kingston JE, Plowman PN.
Saint Bartholomew's Hospital, London, UK

3.30
DISCUSSION

3.40 (Pg 66)
UNUSUAL SECOND MONOCULAR TUMOR IN CURED SPORADIC UNILATERAL UNIFOCAL RETINOBLASTOMA (RB) PATIENT: CASE REPORT.
Antoneli CBG, Seber A, Castro AS, Erwenne C, Bianchi A.
A.C. Camargo Hospital-Antonio Prudente Foundation, Sao Paulo, Brazil.

3.50 (Pg 67)
DIFFERENTIATION AND IMMUNOGLOBULIN SUPERFAMILY ANTIGEN MODULATION BY *ALL-TRANS* RETINOIC ACID ON HUMAN Y-79 RETINOBLASTOMA CELL LINE.
MC Madigan[1], RM Conway[1], NJC King[2], FA Billson[1], PL Penfold[1].
[1]Department of Clinical Ophthalmology; [2]Department of Pathology, University of Sydney, NSW, Australia.

4.00
DISCUSSION

4.10 (Pg 68)
3D ULTRASOUND DOCUMENTATION OF RETINOBLASTOMA TUMOR VOLUME.
L. MacKeen, A. Budning, M. Contractor, Y. Ling, B.L. Gallie.
Department of Ophthalmology, Hospital for Sick Children, and the Eye Research Institute of Canada, University of Toronto, Toronto, Canada.

4.20 (Pg 69)
INTRAOCULAR RETINOBLASTOMA: SYSTEMIC CHEMOTHERAPY WITH CARBO + VP16 +VCR IN PRE-TREATED EYES.
Clelia M Erwenne, Celia G Antoneli, Renate F de Souza, Sung Bok Cha, Martha M M Chojniak.
A.C. Camargo Hospital-Antonio Prudente Foundation, Sao Paulo, Brazil.

4.30
DISCUSSION

4.40 (Pg 73)
ARE ALL MAJOR EYE MALFORMATIONS DUE TO MUTATIONS IN "HOMEOBOX" GENES?
Johan Zwaan.
King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia.

RAPID FIRE PRESENTATIONS
26 (Pg 72)
NORRIE DISEASE IN JAPAN.
Norio Ohba and Yasushi Isashiki.
Department of Ophthalmology, Kagoshima University Faculty of Medicine, Kagoshima-shi 890, Japan.

3 (Pg 70)
PREFERENCE FOR SCREENING OPTIONS OF RETINOBLASTOMA
B.L. Gallie[1], H.Z. Noorani[1], A.S. Detsky[2].
[1]Departments of Ophthalmology, Molecular and Medical Genetics; [2]Health Administration and Medicine; University of Toronto, Toronto, Canada.

4 (Pg 71)
THE ROLE OF TELEMEDICINE IN HEALTH CARE DELIVERY SYSTEMS OF THE FUTURE
A.L. Murphree, R. Ryan, E.S. Moselely III.
Teliatrics Inc, Los Angeles, California

5.30
CLOSE

THURSDAY 14 MARCH EARLY MORNING SESSION

CHAIR MAREE FLAHERTY

GENETICS

8.30 (Pg 74)
THE ELECTRORETINOGRAM IN HIGH MYOPIA.
CA Westall[1,2], CM Panton[1], HS Dhaliwal[2], DA Sigesmund[1], AV Levin[1,2].
[1]Department of Ophthalmology, Hospital for Sick Children; [2]University of Toronto; Toronto, Ontario, Canada.

8.40 (Pg 75)
MEASURING AND ANALYZING THE FULL FIELD PEDIATRIC ELECTRORETINOGRAM.
CM Panton[1], CA Westall[2].
[1]Department of Ophthalmology, The Hospital for Sick Children; [2]University of Toronto, Toronto, Ontario, Canada.

8.50
DISCUSSION

9.00 (Pg 76)
3D ULTRASOUND EVALUATION OF THE OPTIC NERVE AND CHOROIDAL HEMANGIOMA IN STURGE WEBER SYNDROME (SWS).
L MacKeen, A. Levin, R Weitz.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

9.10 (Pg 77)
THE EYE GENETICS TEAM AT THE HOSPITAL FOR SICK CHILDREN.
L. DaSilva, L. Fuccillo, D. DiCiommo, B. Gallie, A. Goldbloom, E. Heon, M. Hyland, A. Levin, S. Lucchetta, L. McCarthy, H. Noorani, C. Panton, J. Picknell, J. Sutherland, C. Westall.
Department of Ophthalmology, Hospital for Sick Children, University of Toronto, and Visible Genetics Inc., Toronto, Canada.

9.20
DISCUSSION

9.30 (Pg 78)
A PATIENT DATABASE TO MANAGE AND FOLLOW OCULAR GENETICS TEAM PATIENTS.
J Sutherland, L DaSilva, B Gallie, A Levin, C Panton, C Westall.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

9.40 (Pg 79)
THE FAMILY HISTORY PEDIGREE AS A VALUABLE DIAGNOSTIC TOOL FOR THE OPHTHALMOLOGIST.
J Sutherland, L DaSilva, A Levin.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

9.50
DISCUSSION

10.00
MORNING TEA

10.30 (Pg 80)
RECLASSIFICATION OF INTRAOCULAR RETINOBLASTOMA
A.L. Murphree
Childrens Hospital Los Angeles and the University of Southern California, Los Angeles.

DISCUSSION

11.45
ISGED AND RB 1998 MEETING

12.30
CLOSE OF CONFERENCE

RETINOBLASTOMA POSTERS

1 (Pg 82)
RANIMUSTINE AND CARBOPLATIN TREATMENT FOR RECURRENT INTRAOCULAR RETINOBLASTOMA WITH VITREOUS SEEDING.
Yoshitaka OHNISHI[1], Youichi KAWANO[2], Eiichi ISHII[3].
Department of Ophthalmology, Wakayama Medical College[1] and Kyushu University[2], and Department of Pediatrics, Kyushu University[3], Japan.

2 (Pg 83)
EXTRAOCULAR RETINOBLASTOMA: TOTAL RESPONSE WITH SYSTEMIC CHEMOTHERAPY - REPORT OF A CASE.
Clelia M Erwenne, Celia G Antoneli, Renate F de Souza, Sung Bok Cha, Martha M M Chojniak.
A.C. Camargo Hospital-Antonio Prudente Foundation, Sao Paulo, Brazil.

3 (Wed 4.40) (Pg 70)
PREFERENCE FOR SCREENING OPTIONS OF RETINOBLASTOMA
B.L. Gallie[1], H.Z. Noorani[1], A.S. Detsky[2].
[1]Departments of Ophthalmology, Molecular and Medical Genetics; [2]Health Administration and Medicine; University of Toronto, Toronto, Canada.

4 (Wed 4.40) (Pg 71)
THE ROLE OF TELEMEDICINE IN HEALTH CARE DELIVERY SYSTEMS OF THE FUTURE
A.L. Murphree, R. Ryan, E.S. Moselely III.
Teliatrics Inc, Los Angeles, California

5 (Pg 84)
HISTOPATHOLOGY OF CELL DEATH, LEUCOCYTIC INFILTRATES AND THE VASCULATURE IN HUMAN RETINOBLASTOMA.
MC Madigan, RM Conway, FA Billson, & PA Penfold.
Department of Clinical Ophthalmology; University of Sydney, NSW, Australia.

6 (Wed 3.50) (Pg 67)
DIFFERENTIATION AND IMMUNOGLOBULIN SUPERFAMILY ANTIGEN MODULATION BY *ALL-TRANS* RETINOIC ACID ON HUMAN Y-79 RETINOBLASTOMA CELL LINE.
MC Madigan[1], RM Conway[1], NJC King[2], FA Billson[1], PL Penfold[1].
[1]Department of Clinical Ophthalmology; [2]Department of Pathology, University of Sydney, NSW, Australia.

7 (Mon 4.10) (Pg 43)
EFFICACY AND TOXITY OF NEOADJUVANT CHEMOTHERAPY (CT) USING ETOPOSIDE (VP16) AND CARBOPLATIN IN 20 PATIENTS (PTS) WITH INTRAOCULAR RETINOBLASTOMA (IORB).
F. Doz, L. Desjardins, E. Quintana, C. Levy, J-M. Zucker.
Institut Curie, Paris, France.

8 (Mon2.30) (Pg 38)
BILATERAL EYE PRESERVATION OF BILATERAL RETINOBLASTOMA.
A Kaneko[1], M Moori[2].
[1]National Cancer Center Hospital, Tokyo, Japan; [2]Tokai University School of Medicine, Ischara-City, Japan.

9 (Mon 4.40) (Pg 45)
THE RETINOBLASTOMA FAMILY ASSOCIATION
Lisa McCarthy, H. McQuigge, S. Croft, A. Bacopolis, Dr. B. Gallie, B. McCarthy
Retinoblastoma Family Association, Ontario, Canada

10

GENETICS POSTERS:

11 (Pg 85)
ABSENCE OF THE SUPERIOR OBLIQUE TENDON IN THREE GENERATIONS.
Joseph GIANGIACOMO.
Department of Ophthalmology, University of Missouri-Columbia, United States of America.

12 (Pg 86)
REORGANISATION OF ANTERIOR PHPV.
Yasuhiko Tanaka, Hideho Matsuda, Mami Yoshino.
Department of Ophthalmology, Keio University Hospital, Tokyo, Japan.

13 (Mon 10.40) (Pg 25)
THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. I. OVERVIEW.
D.A.Mackey[1,2], D.G.Platts[1], J.L.Rait[2], P.J.McCartney[1], M.A.Coote[2], R.G.Buttery[1], R.M.Wilkinson[1], J.M.Barbour[1], J.Sack[2], R.L.Cooper[1], C Green[1], CH Wilkinson[1],M.,Rivers[2],J.Lynch[2], M.Ring[1], V.Litchfield[1], C Cirillo[1].
University of Tasmania[1], University of Melbourne, Australia.[2]

14 (Mon 11.10) (Pg 87)
THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. III THE PHENOTYPE OF THE GLAUCOMA PEDIGREE GTAS1. (Mon 11.10)
J.L.Rait[1], P.J.McCartney[1], M.A.Coote[1] R.G.Buttery[2], J.Sack[1], J.A.Barbour[2], R.M.Wilkinson[2], D.A.Mackey[12].
University of Melbourne[1], University of Tasmania, Australia[2]

15 (Mon 11.10) (Pg 88)
THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. IV THE PHENOTYPE OF THE GLAUCOMA PEDIGREE GVic1
M.A.Coote[1], J.L.Rait[1], P.J.McCartney[2], M.Rivers[1] J.Lynch[2], D.A.Mackey[12]
University of Melbourne[1], University of Tasmania, Australia.[2]

16 (Mon 11.10) (Pg 89)
THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. IV THE PHENOTYPE OF THE GLAUCOMA PEDIGREE GTas2
P.J.McCartney[1] M.A.Coote[2] J.L.Rait[2] R.G.Buttery[1] D.G.Platts[1] J.M.Barbour[1] R.M.Wilkinson[1] C.H.Wilkinson[1] D.A.Mackey[1,2].
University of Tasmania[1] University of Melbourne, Australia[2].

17 (Mon 11.10) (Pg 90)
GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) V: A NEW AUTOSOMAL DOMINANT NEUROPATHY RESEMBLING LOW TENSION GLAUCOMA.
R.M. Wilkinson[1], C.H. Wilkinson[1], J.M. Barbour[1], K.A.S. Sindhu[1], R.L. Cooper[1], C.M. Green[1], M.A. Coote[2], J.L. Rait[2], P.J. McCartney[1], D.A. Mackey[1,2].
University of Tasmania[1]; University of Melbourne[2], Australia.

18 (Pg 91)
GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) VI: AUTOSOMAL DOMINANT OPTIC ATROPHY (CHROMOSOME 3q) RESEMBLES LOW TENSION GLAUCOMA IN SOME FAMILY MEMBERS.
D.A. Mackey[1,2], F.B. Halliday[3], A.P. de Graaf[1,2], D.L. Healey[2], E. Rapley[3], R.M. Wilkinson[1], C.H. Wilkinson[1], J.M. Barbour[1], M.A. Coote[2] and P.J. McCartney[1].
University of Tasmania[1]; University of Melbourne[2]; University of New South Wales[3].

19 (Mon 10.40) (Pg 92)
GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) VII: THE CONFOUNDING PROBLEM OF OVERLAPPING PEDIGREES.
C.H. Wilkinson[1], R.M. Wilkinson[1], J.M. Barbour[1], J. Sack[2], M. Troski[2], M.A. Ring[1], R.L. Cooper[1], J. Lynch[2], J.L. Rait[2], P.J. McCartney[1], M.A. Coote[2],
D.A. Mackey[1,2].
University of Tasmania[1]; University of Melbourne[2], Australia.

20 (Pg 93)
GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) VIII: THE ASSOCIATION OF SYSTEMIC ANTI-HYPERTENSIVE TREATMENT IN GLAUCOMA PEDIGREES.
J.M. Barbour[1], R.M. Wilkinson[1], C.H. Wilkinson[1], D. L. Healey[2], A.P. de Graaf[1,2], M.A. Coote[2], P.J. McCartney[1], M.A. Maclean[2], M.C. Maher[2], C.M. Green[1], D.G. Platts[1], D.A. Mackey[1,2].
University of Tasmania[1]; University of Melbourne[2], Australia.

21 (Mon 10.30) (Pg 24)
GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) IX: DEFINING GLAUCOMA FOR LINKAGE STUDIES.
M.A. Coote[1], P.J. McCartney[2], R.M. Wilkinson[2], D.A. Mackey[1,2].
University of Melbourne[1], University of Tasmania[2], Australia.

22 (Pg 94)
RETINAL DYSTROPHY IN 18Q- (DE GROUCHY) SYNDROME.
S Mahant, A Levin.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

23 (Pg 95)
CLONING OF THE HUMAN *CHX10* GENE AND MUTATION SCREENING OF CANDIDATE DISEASES.
L Plodder, L Liu, J de Chen, A Duncan, V Nguyen, D Cox, E Traboulsi, A Levin, R McInnes.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada; Queen's University, Kingston, Johns Hopkins Hospital, Baltimore, Maryland, USA.

24 (Pg 96)
A TASMANIAN PEDIGREE OF AUTOSOMAL DOMINANT RECURRENT CORNEAL EROSION SYNDROME WITH ASSOCIATED MAP-DOT-FINGERPRINT (M-D-F) CORNEAL DYSTROPHY.
S Malcolm[1], C Green[2], G Wise[1], D Mackey[2,3].
[1]Royal Hobart Hospital; [2]University of Tasmania; [3]University of Melbourne

25 (Pg 97)
OCULAR MANIFESTATIONS OF JACOBSEN SYNDROME (11Q-).
S Somani[1], A Levin[1], M Nowaczyk, A Feigenbaum, R Davidson, T Costa.
[1]Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

26 (Wed 4.40) (Pg 72)
NORRIE DISEASE IN JAPAN.
Norio Ohba and Yasushi Isashiki.
Department of Ophthalmology, Kagoshima University Faculty of Medicine, Kagoshima-shi 890, Japan.

27 (Mon 12.10) (Pg 31)
LINKAGE OF A GENE FOR MACULAR CORNEAL DYSTROPHY TO LONG ARM OF CHROMOSOME 16 (16q22).
G.K. Klintworth[1,3], F. Jonasson[5], F. Lennon[4], J. Sarrica[4], J. Stauffer[4], K.F. Damji[1], M.A. Pericak-Vance[1,2,4] and J.M. Vance[2,4].
Departments of Ophthalmology[1], Genetics[2], and Pathology[3] and Division of Neurology[4], Duke University, Durham, NC; University Department of Ophthalmology, Landakot Hospital, Reykjavik, Iceland[5].

28 (Mon 11.50) (Pg 30)
AUTOSOMAL DOMINANT IRIDOGONIODYSGENESIS AND AXENFELD-RIEGER SYNDROME ARE GENETICALLY DISTINCT.
MA Walter, F Mirzayans, K Hickey, AJ Mears, WG Pearce.
Department of Ophthalmology, University of Alberta, Edmonton, Alberta, Canada.

29 (Mon 12.20) (Pg 32)
OCULAR MANIFESTATIONS OF CORNELIA DE LANGE SYNDROME.
AV Levin, J.H. Shin
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada

30 (Mon 12.10) (Pg 57)
CARUNCLE ABNORMALITIES IN OCULO-AURICULO-VERTEBRAL SPECTRUM (OAV).
N Nijhawan, J Siegel-Bartelt, AV Levin.
Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

31 (Wed 9.35) (Pg 50)
EFFECT OF AGE IN INTERPRETING THE ELECTRORETINOGRAM.
CA Westall[1,2], CM Panton[1], AV Levin[1,2]
[1]Department of Ophthalmology, Hospital for Sick Children; [2]University of Toronto; Toronto, Ontario, Canada.

ABSTRACTS ARE LISTED IN ORDER OF TALKS

POSTERS WITHOUT TALKS ARE LISTED AT THE END

EFFICIENT IDENTIFICATION OF GENETIC DISEASE LOCI

Val C. Sheffield and Edwin M. Stone.

The Departments of Pediatrics and Ophthalmology, University of Iowa, Iowa City, Iowa, U.S.A.

We have developed efficient cost effective methods for performing genome-wide searches to identify genetic disease loci. Strategies include using high quality tetranucleotide genetic markers in combination with multiplex PCR, multiple loading of gels, and automated silver-staining of gels. In addition, We have developed and utilized a DNA pooling strategy which greatly reduces the genotyping effort needed to identify disease loci. When pooled DNA samples are used as the template for PCR with short tandem repeat polymorphic markers (STRPs), the resulting amplification product will contain all alleles present in the pooled population. The relative frequency of alleles in the pooled DNA sample correlates with the intensity of each allelic band on the electrophoretic gel. STRPs linked to the disease locus will show a different pattern of alleles in an affected DNA pool compared to an appropriate control DNA pool. We have used these approaches to identify multiple loci causing inherited eye diseases. The details of the strategies, as well as new recently mapped disease loci will be presented.

MACULAR AND RETINAL DYSTROPHIES: CLASSIFICATION REVISITED.

John Grigg[1], Robyn Jamieson[2] Frank Billson[1]

Department of Clinical Ophthalmology, Sydney Eye Hospital[1], and Department of Clinical Genetics, The New Children's Hospital, Sydney[2]

Macular and retinal dystrophies are a heterogenous group of disorders. Traditional classification systems have been based on the clinical appearance, age of onset or the principal anatomic layer of the fundus affected.

Since the identification of the underlying genetic defects in an increasing number of these disorders we propose an extension of the current classification based on these molecular approaches. This classification groups disorders according to the function of the gene involved.

The groups identified based on identified mutations are disorders of:
1. Phototransduction

2 Photoreceptor outer-segment structure

3 Photoreceptor development

By grouping dystrophies with altered cellular function, disorders with similar phenotype can be separated, such as the various froms of retinitis pigmentosa, or disorders with diverse appearance may be grouped together such as those asssociated with mutations in the peripherin gene.

Accurate diagnosis and classification is important if specific therapies are to be considered.

AGE-RELATED MACULAR DEGENERATION: A GENETIC-EPIDEMIOLOGICAL APPROACH.

C.C.W. Klaver[1,2], R.C.W. Wolfs[1,2], J.R. Vingerling[1,2], C.M. van Duyn[2], A. Hofman[2], P.T.V.M. de Jong[1,3]

[1] Department of Ophthalmology, Erasmus University Medical School, Rotterdam, [2] Department of Epidemiology & Biostatistics, Erasmus University Medical School, Rotterdam, [3] Netherlands Ophthalmic Research Institute, Amsterdam.

Purpose: To detect familial aggregation of age-related macular degeneration (AMD) and to evaluate the environmental and genetic components causing the aggregation.
Methods: Probands were derived from the population-based Rotterdam Study and consisted of all 97 cases with atrophic or neovascular macular degeneration and of 156 age and sex-matched controls without any signs of AMD. First degree relatives of probands underwent a complete ophthalmological examination, including fundusphotography, and a cardiovascular examination. In addition, they were interviewed for assessment of environmental risk factors. This study is not completed yet, but in a interim-analysis we compared familial aggregation of the late stages of AMD among cases and controls.
Results: At this point in the study, we have screened the siblings and children of 60 AMD probands and of 75 controls for the presence of AMD. Overall response rate was 80%. The prevalence of atrophic or neovascular AMD was 13% (8/60) in siblings of cases and 0% (0/55) in siblings of controls. Atrophic or neovascular AMD was not present among children of probands.
Conclusion: Our preliminary results suggest familial aggregation of AMD. Our future analysis will reveal to what extent this is caused by environmental factors and genetic factors.

MOLECULAR VS CONVENTIONAL SCREENING FOR RB1 MUTATIONS.

B. L. Gallie[1], H. Z. Noorani[1], H. N. Khan[1], A. S. Detsky[2].

[1]Departments of Ophthalmology, Molecular and Medical Genetics, and [2]Health Administration and Medicine, University of Toronto, Toronto, Canada.

Purpose: To evaluate the relative costs of molecular RB1 mutation identification in comparison to conventional screening for retinoblastoma tumors for relatives of bilateral retinoblastoma patients.

Methods: RB1 deletions and insertions were identified by analysis of exons and promoter DNA fragments by quantitative multiplex PCR and sizing using an automated sequencer. Point mutations were identified by sequencing of each exon. Conventional screening included repeated examinations under anaesthesia and in the clinic. We measured and valued all direct health care resources for either strategy, and evaluated the expected costs of the two strategies by decision analysis.

Results: The baseline analysis predicted that screening a prototype family consisting of one proband and 7 at-risk relatives would cost (in 1994 Canadian dollars) $8,674 by the molecular strategy and $31,430 by the conventional strategy. The molecular strategy was cost saving even if the number of at-risk relatives in a family was only one. For the molecular route to cease being cost saving, the test sensitivity for the proband had to fall below 0.05, or the proband mutation identification cost to exceed $12,152.

Conclusions: Sensitivity analyses revealed a significant saving of health care dollars by the molecular route, indicating the benefit of redirecting economic resources to the molecular strategy.

GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) IX: RANKING GLAUCOMA FOR LINKAGE STUDIES.

M.A. Coote[1], P.J. McCartney[2], R.M. Wilkinson[2], D.A. Mackey[1,2].

University of Melbourne[1], University of Tasmania[2], Australia.

Purpose. The "GIST Score" was developed to facilitate linkage analysis of adult onset Primary Open Angle Glaucoma (POAG) pedigrees. Previous genetic linkage studies on Juvenile Open Angle Glaucoma pedigrees have relied upon an analysis of definitely affected individuals using the 'single best diagnosis' convention. Studies of adult onset POAG have been complicated by the limited numbers of affected individuals in any pedigree due to the later onset of the disease, although many members of the pedigree may have equivocal clinical features or are too young to show signs of the disease.

Method. The "GIST Score" is a numeric value between 0 and 1 where 0 is clinical certainty of absence of the disease and 1 is the definitive diagnosis of POAG. The score is developed by assigning relative weighting to key clinical features which results in a 'pedigree probability' of the diagnosis being present or absent in an individual within a pedigree.

Conclusion. Ranking of borderline and unaffected glaucoma subjects allows the laboratory more flexibility in the use of the members of the pedigree for linkage analysis.

THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. I. OVERVIEW.

D.A.Mackey[1,2], D.G.Platts[1], J.L.Rait[2], P.J.McCartney[1], M.A.Coote[2], R.G.Buttery[1], R.M.Wilkinson[1], J.M.Barbour[1], J.Sack[2], R.L.Cooper[1], C Green[1], CH Wilkinson[1],M.,Rivers[2],J.Lynch[2], M.Ring[1], V.Litchfield[1], C Cirillo[1].

University of Tasmania[1], University of Melbourne, Australia.[2]

Purpose: To find the genes that cause adult onset primary open angle glaucoma (POAG) we need to identify large families with POAG. Few large pedigrees have been available for research despite the common family history of glaucoma.
Method: We adopted a massive population screen in Australia's island state Tasmania (Population 500,000), where there has been a captive population, a large founder effect last century, a high standard of ophthalmic care and an avid interest in genealogy.
Results: From surveys distributed through the pharmacies and ophthalmology practices in the state, over 1000 people with glaucoma replied. So far 4 pedigrees with different phenotypes of adult onset POAG, each with more than 15 living affected family members have been identified. These were identified from 13 pedigrees examined to date. Fifty good pedigrees remain to be examined.
Conclusion: Preliminary results from our survey suggest that adult onset POAG is often an autosomal dominant disease. This has previously not been recognised because of the subtle nature of glaucoma.

FAMILY AGGREGATION OF PRIMARY OPEN-ANGLE GLAUCOMA: PRESENTATION OF STUDY DESIGN AND INTERIM ANALYSES.

R.C.W. Wolfs,[1,2], C.C.W. Klaver[1,2], C.M. van Duyn[2], A. Hofman[2], P.T.V.M. de Jong[1,3]

[1] Department of Ophthalmology, Erasmus University Medical School, Rotterdam, [2] Department of Epidemiology & Biostatistics, Erasmus University Medical School, Rotterdam, [3] Netherlands Ophthalmic Research Institute, Amsterdam.

Purpose: To study family aggregation of primary open-angle glaucoma (POAG).
Methods: Siblings (brothers and sisters) and children of all POAG cases (n=56) and of controls without any signs of glaucoma (n=150) from the population- based Rotterdam Study were examined. The ophthalmological examination comprised visual acuity testing and refraction measurement, intraocular pressure measurement, visual field examination (Humphrey C24-2 threshold test), mono- and stereoscopic fundus photographs (disc and macular area) and direct and indirect ophthalmoscopy. In addition, blood pressure was measured, all subjects were interviewed, and blood samples were drawn for DNA-analyses. Subjects with abnormal visual fields with the Humphrey perimeter were retested with kinetic Goldmann perimetry, using a standardized protocol. Criteria for the diagnosis POAG were presence of a glaucomatous visual field defect on kinetic Goldmann perimetry, in combination with a vertical cup-disc ratio (VCDR) > 0.4 and/or an asymmetry of the VCDR > 0.2 between both eyes and/or an intraocular pressure > 21 mmHg and/or treatment for glaucoma.
Results: Until now 52 POAG families and 75 persons in the control group have been asked to participate. There was an overall response of 80% (only living family members are used in analyses). Anamnestic data on family history and glaucoma were often not correct, probably due to different definitions of glaucoma and due to lack of knowledge about the disease. In the family members in the POAG group we found five glaucoma-cases in the 62 examined siblings. Two of the 65 examined children of the POAG cases, also had POAG. Until now, we did not find POAG in any of the examined family members in the control group.
Conclusion: From these preliminary results it seems that family members in the POAG-group have a higher risk of having POAG than family members in the control-group, although this risk is lower than is suggested in former (clinic-based) research.

THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. II-IV THE PHENOTYPES OF THE GLAUCOMA PEDIGREES GTAS1, GTAS2 GTAS6 AND GVIC1.

P.J.McCartney[1],M.A.Coote[2], J.M.Barbour[1], R.M.Wilkinson[1], C.H.Wilkinson[1], J.L.Rait[2], R.G.Buttery[2], M.Rivers[1], J.Lynch[2], J.Sack[2] D.G.Platts[1], K.A.S. Sindhu[1], R.L. Cooper[1], C.M. Green[1], D.A.Mackey[1,2].

University of Tasmania[1] University of Melbourne, Australia[2].

Purpose: To find the genes that cause adult onset primary open angle glaucoma (POAG) we need to accurately phenotype affected family members. We now describe the phenotypes in the first four family examined in the Glaucoma Inheritance Study in Tasmania (GIST).

Method: The family trees of GTas1, GTas2, GTas6 and GVic1 were traced using conventional genealogy and all relatives over 40years were examined where possible. In GTas1, we examined 74 descendants. In GVic1 we examined 28 descendants over 20 years of age. In GTas2 we examined 101 descendants. In GTas6 we examined 84. The examinations performed included: history, Humphrey visual fields, intraocular pressure, gonioscopy and stereodisc photography.

Results: In GTas1, ten members had significant pressure, disc and field changes. 8 members had 2/3 significant pressure, disc and field changes, 6 patients had possible glaucoma with only one significant sign. 7 patients were equivocal, and 43 members were normal or too young to yet show signs of glaucoma. In GVic1 ten members had significant pressure, disc and field changes, 3 members had 2/3 significant pressure, disc and field changes, 2 patients had possible glaucoma with only one sign, and 13 members were normal or too young to yet show signs of glaucoma. In GTas2 seventeen members had significant pressure, disc and field changes. 5 members had 2/3 significant pressure, disc and field changes, 9 patients had possible glaucoma with only one significant sign. 50 patients were equivocal or too young to yet show signs of glaucoma, and 17 members were normal. Many members of this family were also on treatment for systemic hypertension. In GTas6 three of 84 patients had elevated pressure, disc and field abnormalities, 2 patients had elevated pressure, field abnormalities and borderline disc appearance, 13 patients had disc and field abnormalities and 20 patients had significant visual field defects alone.

Conclusion: The family GTas1 shows a consistent subtle phenotype of mildly elevated pressures, initially superior arcuate field defects, and progressive notching of the optic discs. The family GVic1 shows a consistent severe phenotype with onset around 30 years, variably elevated pressures, normal angles, and concentric disc cupping with attendant field loss. This family has high penetrance autosomal dominant POAG, with onset in the fourth decade. The family GTas2 shows a variable phenotype of moderately elevated pressures, major field defects, and a spectrum of localised cup enlargement. This family has a more variable phenotype. The family GTas6 shows an optic neuropathy characterised by an initial superior arcuate scotoma with normal visual acuities progressing to more extensive glaucomatous field loss, mild tritanopic defects, normal or minimally elevated intraocular pressures, and late detection of progressive optic atrophy with cupping.

ATTITUDES TOWARDS PREDICTIVE TESTING FOR RETINITIS PIGMENTOSA (RP).

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The Hospital for Sick Children, Toronto, Ontario, Canada.

Purpose: To measure attitudes of members of autosomal dominant RP families towards predictive testing for RP.
Method: A questionnaire was mailed to affected individuals in 64 families and their offspring, siblings, parents and grandparents inquiring about their experience with and attitudes towards predictive testing for RP either by examination, ERG or molecular testing.
Results: Preliminary data will be presented from the questionnaires received from 20 families analysing correlations between family status, visual status, experience with predictive testing and affectation with opinions towards types of predictive testing.
Conclusions: Understanding the attitudes of affected individuals and their families is an important step in the formation of recommendations for the use of predictive testing, especially molecular testing in patients with RP.

GILLESPIE SYNDROME.

Maree Flaherty[1] , John Nelson[2] and Padraic Grattan-Smith[1].

(All authors previously at Westmead Hospital, Sydney. Currently: New Children's Hospital, Sydney[1]; King Edward Memorial Hospital for Women, Perth[2]).

Purpose and Method: To present two further cases of Gillespie syndrome, which is a rare disorder first described in 1961. It consists of a triad of partial aniridia, cerebellar ataxia and mental retardation. Only twelve cases have been previously reported.

Results and Conclusions: Unique iris findings are highlighted as the hallmark of the disorder. The parents of one child are first cousins, supporting previous suggestions that the syndrome is inherited in an autosomal recessive manner. Gillespie syndrome can be distinguished from other forms of aniridia on both clinical and genetic grounds.

AUTOSOMAL DOMINANT IRIDOGONIODYSGENESIS AND AXENFELD-RIEGER SYNDROME ARE GENETICALLY DISTINCT.

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Department of Ophthalmology, University of Alberta, Edmonton, Alberta, Canada.

Purpose: To determine whether there is a locus for iridogoniodysgenesis (IGD) / Familial iris hypoplasia in the region of the known Axenfeld-Rieger syndrome locus at 4q25 and to define the ocular phenotype within the autosomal dominant iris hypoplasia group of disorders.

Methods: Clinical examinations were performed on 27 members with 11 affected from one family in which the IGD occurred in association with the non-ocular features characteristic of Axenfeld-Rieger syndrome and on 52 members with 30 affected from a second family in which the IGD was not associated with the non-ocular features of Axenfeld-Rieger syndrome. These patients were genotyped using known marker loci within the 4q25 region. Lod score values were calculated using the MLINK option of the LINKAGE program.

Results: The iris hypoplasia in each IGD family was similar. However, in the IGD family with only ocular features (IGD Anomaly) a majority of these affected exhibited a goniodysgensis with excess tissue in the angle and anomalous angle vascularity. These findings were absent in the IGD family with syndromic features (IGD Syndrome). Linkage analysis in the IDGA family excluded the 4q25 region while in the IGDS family complete linkage was found to D4S407 and D4S1616, two markers in the 4q25 region, with LOD scores of 7.83 and 4.82 respectively.

Conclusions: Mutations at the 4q25 locus can result in variable ocular findings but which occur in combination with non-ocular dental, jaw and umbilical abnormalities. Mutation at a separate locus must underlie IGD with only ocular anomalies.

LINKAGE OF A GENE FOR MACULAR CORNEAL DYSTROPHY TO LONG ARM OF CHROMOSOME 16 (16q22).

G.K. Klintworth[1,3], F. Jonasson[5], F. Lennon[4], J. Sarrica[4], J. Stauffer[4], K.F. Damji[1], M.A. Pericak-Vance[1,2,4] and J.M. Vance[2,4].

Departments of Ophthalmology[1], Genetics[2], and Pathology[3] and Division of Neurology[4], Duke University, Durham, NC; University Department of Ophthalmology, Landakot Hospital, Reykjavik, Iceland[5].

Purpose: Despite the limitation of the clinical manifestations in macular corneal dystrophy (MCD) to the cornea the disorder has been found to be a systemic one involving corneal and cartilaginous keratan sulfate containing proteoglycans. We sought to isolate the gene(s) for MCD in families affected with MCD type I and II.
Method: Sixteen American and Icelandic families (eleven MCD type I and five MCD type II) were analyzed for linkage using 208 polymorphic microsatellite markers.
Results: We mapped a gene for MCD type I on the long arm of chromosome 16 (16q22) by finding a significant LOD score of $z = 7.79$ at $q = 0.05$ with the 16q22 probe D16S518. Although insufficient families with the MCD type II were studied to identify definitively its locus a LOD score of $z = 2.30$ @ $q = 0.00$ was obtained using the same marker for this less common type of MCD. Five Icelandic families could be joined into a single, extremely consanguineous family containing both MCD types I and II.
Conclusions: Together the data are consistent with the hypothesis that MCD type I and II arise from mutations in the same genetic locus on chromosome 16 (16q22).

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OCULAR MANIFESTATIONS OF CORNELIA DE LANGE SYNDROME.

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Purpose: Cornelia de Lange Syndrome (CdLS) is a syndrome of growth retardation, developmental delay, limb abnormalities, characteristic facial features, and gastrointestinal reflux. This study was designed to expand the previous single large study of the ocular manifestations of CdLS.
Methods: The CdLS Foundation holds annual family conferences that the authors attended from 1990-95 to conduct ophthalmic examinations. Examinations included oculofacial measurements, visual acuity testing, hand-held slitlamp biomicroscopy, cycloplegic refraction, and dilated indirect fundoscopy.
Results : The patients manifested 100% hypertrichosis with long arcuate eyelashes, 98% synophrys, 46% ptosis, 35% blepharitis, 15% nasolacrimal gland obstruction, 16% strabismus and 5% nystagmus. New findings include 91% peripapillary pigment, 23% microcornea and 8% macular hypoplasia, Myopia was the prevailing refractive error. Oculofacial measurements allowed for the creation of normative age-matched curves.
Conclusion: Ocular manifestations are prevalent in CdLS and may have diagnostic significance. All children should be assessed. The recognition of blepharitis may prevent unnecessary nasolacrimal duct probing for similar symptoms.

RETINOBLASTOMA IN PAPUA NEW GUINEA.

Nitin VERMA.

Boroko, Papua New Guinea.

Purpose and Method: In Papua New Guinea, retinoblastoma is normally seen when extraocular spread has occurred. The commonest form of presentation, therefore, is proptosis rather than leucocoria or an ocular deviation as would be expected in the early stages. Bilateral tumors are seen infrequently.

Results and Conclusion: In this presentation, the clinical features and management of 16 patients with orbital retinoblastoma in the age group 3-6 years who presented themselves to the eye clinic at the Port Moresby General Hospital is discussed. The standard treatment after radiology and ultrasonography to determine the extent of spread of the tumor was an exenteration with or without a skin graft. This was followed by chemotherapy and teleradiotherapy. Tumor recurrence was seen in 56% of these patients at the end of one year. All these patients died. The clinical features of orbital lymphoma and ocular tuberculoma which were mistaken for retinoblastoma are also discussed.

RETINOBLASTOMA (RB) IN BRAZIL: A DISTINCT SUBTYPE OF DISEASE.

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A.C. Camargo Hospital-António Prudente Foundation, São Paulo, Brazil.

From January 91 to December 95, 120 patients with RB were admitted to A.C. Camargo Hospital: 63 girls and 57 boys, 101 white and 19 non-white. Median age at diagnosis was 24 months. Median time from first detection to referral was 4 months. There was unilateral tumour in 64 and bilateral tumour in 56 patients. No patient was diagnosed because of familial history of RB. 31 patients presented extraocular (EO) disease (21 unilateral and 10 bilateral).

In extraocular RB, adding the pair of drugs Ifosfamide plus Etoposide to the previous schedule (cisplatin, Tenoposide/VAC), survival rates had increased. Among the 120 patients, 14 died with progressive disease, 6 are lost to follow-up, 90 were alive without disease and 10 are alive with local disease in the second eye.

We believe that late referral was the main cause of EO disease. If there is an aggressive subtype of disease in developing countries, this needs further study.

THE ROYAL CHILDREN'S HOSPITAL RETINOBLASTOMA EXPERIENCE

Susan Carden, John McKenzie, James Elder, David Mackey, Sandra Staffieri

Department of Ophthalmology , Royal Children's Hospital, Melbourne

A retrospective analysis of children with retinoblastoma who were managed at the Royal Children's Hospital Melbourne is presented.The results are taken between the years 1970 to 1994 and include all Victorian cases by cross referencing to the cancer registry at the Anti-cancer Council of Victoria , radiotherapy records at the Peter MacCallum Cancer Institute and medical records at the Royal Victorian Eye and Ear Hospital.

During this 25 year period there were 113 cases with 45 having bilateral disease ,66 having unilateral disease with 2 being indeterminate. The mean age of presentation was 12 months for bilateral disease and 24 months with unilateral disease.

Presentation was most commonly with leucocoria but also included squint , reduced vision and family history.

There were 6 cases with metastatic disease from the ocular primary with 2 survivors. Second tumours encountered were osteosarcoma of the maxilla/ethmoid and a rhabdomyosarcoma. Other causes of mortality were encountered.

THE ROYAL CHILDREN'S HOSPITAL RETINOBLASTOMA EXPERIENCE: OCULAR TREATMENT

John McKenzie, Sandra Staffieri, James Elder, David Mackey, Susan Carden

Department of Ophthalmology, Royal Children's Hospital, Melbourne

The ocular management of retinoblastoma at the Royal Childrens Hospital over the period 1970 to 1995 was reviewed. During this period there were 113 cases with 45 having bilateral disease and 66 having unilateral disease with 2 indeterminate. Primary enucleation was the most commonly employed treatment modality with the following rates

Unilateral Disease	- 60 of 66 patients had one eye enucleated
Bilateral Disease	- 27 of 45 patients had one eye enucleated
	5 of 45 patients had both eyes enucleated

External beam radiotherapy , plaque radiotherapy , cryotherapy and chemotherapy were all employed as primary therapy , adjunctive therapy or salvage therapy. The evolving role of these modalities over this period will be examined.

RETINOBLASTOMA:

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Department of Ophthalmology and Eye Health Institute, The University of Sydney, Sydney, New South Wales, Australia

The natural history of retinoblastoma is examined in the light of two series, one from Victoria and the other from New South Wales.

The Victorian series reviewed management and outcome from 1966 to 1977 (includes 77 cases), the New South Wales series examines from 1977 to 1993 (includes 87 cases). Although these studies were carried out in different states, a striking feature is that comparison of the more recent study with the earlier study shows the mortality remains the same, together with a significant morbidity from enucleation and side-effects of therapy. Detailed visual results will be presented.

The methods of treatment that have evolved since 1977 are reviewed and the factors to weigh when considering appropriate protocols for treatment are examined with particular reference to the special features that characterise hereditary disease. The role of influencing immunological factors in treatment and its relevance to current retinoblastoma research in the Department of Ophthalmology, University of Sdney, Sydney Eye Hospital is considered with regard to its possible application to providing new avenues for management in retinoblastoma.

BILATERAL EYE PRESERVATION OF BILATERAL RETINOBLASTOMA.

A Kaneko[1], M Moori[2].

[1]National Cancer Center Hospital, Tokyo, Japan; [2]Tokai University School of Medicine, Isehara-City, Japan.

Purpose: Since our development of new modalities of conservative therapy of retinoblastoma, we have frequently performed bilateral eye preservation of bilateral retinoblastoma at our hospital, if allowed by informed choice of parents of the infants.
Method: From 1990 to 1993, 31 patients with bilateral retinoblastoma visited our hospital without any previous therapy. Bilateral eyeballs were tried to preserve on 22 patients (71%). 86% of them were successfully treated without enucleation.
Results: Most of the eyeballs with advanced retinoblastoma were treated with external beam irradiation combined with ocular hyperthermia using Lagendijk's applicator. Recurrence after radiotherapy was treated by chemotherapy using melphalan by ophthalmic artery injection and/or vitreous injection supported by the ocular hyperthermia. One patient with successfully preserved eyeballs had rhabdomyosarcoma in the irradiated part of the temporal fossa 4 years after the treatment.
Conclusion: The bilateral eye preservation is not only safe but also important for quality of life of the patients.

PRIMARY METHODS OF MANAGEMENT IN RETINOBLASTOMA: RETINOBLASTOMA INTERNATIONAL COLLABORATIVE STUDY REPORT 3.

James J. Augsburger[1], Michael Giblin[2], Markus Kleineidam[1], The RICS Group[3].

[1]Oncology Unit, Retina Service, Wills Eye Hospital, Jefferson College, Philadelphia, Pennsylvania, USA; [2]New Children's Hospital, Sydney, New South Wales, Australia; [3]Other clinical centres listed at the conclusion of this manuscript.

Background: The Retinoblastoma International Collaborative Study (RICS) enrolled 206 children with newly diagnosed retinoblastoma at 28 clinical centres during the interval 1 July 1987 and 31 December 1989. Previous publications have described the objectives and structure of the study and summarized the baseline clinical findings in these children.

Methods: The primary methods of treatment used for each child and each affected eye were tabulated. Treatment in this study was not randomised but was at the discretion of the attending ophthalmologist on a case-by-case basis.

Results: Of 127 children with unilateral disease, 112 (88.2%) were managed by primary enucleation of the affected eye. Of 79 children with bilateral disease, 65 (82.2%) were managed by primary enucleation of at least one eye. Eight children with bilateral retinoblastoma were managed by primary enucleation of both eyes. Combining the unilateral and bilateral cases, 177 of the 206 children (85.9%) were managed by primary enucleation of at least one eye. The most common conservative method of treatment in this series of patients was external beam radiotherapy, which was utilized in at least one eye of 52 of the children (25.2%).

Conclusion: The vast majority of patients evaluated in this study were managed by primary enucleation of at least one eye.

CHEMOTHERAPY AS PRIMARY TREATMENT OF INTRAOCULAR RETINOBLASTOMA.

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Childrens Hospital Los Angeles and the University of Southern California, Los Angeles, United States of America

We first began using chemotherapy as a primary treatment modality for intraocular retinoblastoma in 1990. For this presentation, we reviewed 129 consecutive retinoblastoma patients treated at CHLA between July 1990 and December 1995. Initially, chemotherapy was given as a single monthly dose of carboplatin 560mgM^2 followed by 2 sessions of transpupillary laser hyperthermia (thermochemotherapy or TCT). Treatment failure was considered to be the requirement of external beam radiotherapy or enucleation. TCT effected a primary cure in 29/29 Group 1 and 2 eyes, but in only 2/7 Group 3 and 4 eyes. None of 11 eyes with any vitreous seeding were successfully treated by TCT.

In September 1992, we began to evaluate the chemotherapy combination used by Kingston and Hungerford (carboplatin, etoposide and vincristine or CEV). They combined the triple chemotherapy with radiotherapy to treat eyes with vitreous seeding (London protocol). We used CEV for chemoreduction of intraocular tumour volume and followed that with aggressive local therapy (Los Angeles protocol=CEV+). Treatment failure was considered the need for EBR or enucleation.

None of the 15 eyes in Groups 1-3 treated either primarily or secondarily with CEV+ have been treatment failures. The longest follow-up is 42 months. None of 12 eyes with exophytic retinoblastoma and subretinal seeding obvious at the time of treatment have been salvaged with CEV+. Among 25 consecutive eyes with diffuse vitreous seeding present at the time of diagnosis, 7 were treated with the London protocol. 4 of those 7 have been salvaged with 2 eyes surviving 24 months and 1 eye 42 months. One eye has only 6 months follow-up. All of the 18 eyes with vitreous seeding have failed CEV+ alone.

Major ocular complications have been florid radiation retinopathy induced by Iodine plaques at a dose of 35 to 40 Gy to the apex following CEV. That dose of plaque radiation must be significantly reduced. Non ocular complications have consisted primarily of haematologic toxicity. We have observed no hearing loss or retinal toxicity from the carboplatin.

TCT with or without local therapy is effective in treating Group 1 and 2 disease. CEV+ aggressive local therapy is effective management for Groups 3 and 4 disease. Groups 5a and 5b disease, along with eyes containing exophytic retinoblastoma and total detachments, are not successfully treated with either protocol. Current plans are underway for a National Eye Institute multi-centre clinical trial to evaluate CEV+ for 9 months with or without cyclosporin in this group of patients.

CHEMOTHERAPY CAN REPLACE RADIATION FOR INTRAOCULAR RETINOBLASTOMA.

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Departments of Ophthalmology[1], Oncology[2], and Pharmacology and Toxicology[3], Hospital for Sick Children, University of Toronto, Toronto, Canada; and British Columbia Cancer Agency, University of British Columbia, Vancouver, Canada.

Purpose: To devise a treatment protocol to cure intraocular retinoblastoma without the use of radiation.
Methods: A protocol of systemic chemotherapy (vincristine, teniposide, and carboplatin, with high dose coincidently administered Cyclosporin A to block the multidrug-resistance protein) and focal 532 and 1064 nm laser and cryotherapy was used to treat 26 eyes in 21 children. Necessity for irradiation or enucleation to control tumor was scored as relapse.
Results: At median followup 2.4 years, relapse-free rate was 80% (21/26 eyes), better than published success rates for similar tumors using radiation. Retinoblastoma tumor shrank in 23/26 eyes, in response to the chemotherapy. Vitreous seeds disappeared completely or became dormant in 7/9 eyes, but failed to respond in 2/9 eyes. Central vision recovered significantly following tumor shrinkage, even in macula. No tumour extended extraocularly. Of eyes treated primarily on this protocol, only 1/18 required irradiation; that eye was eventually enucleated for recurrent vitreous seeds. Of eyes that were treated on this protocol after prior failure of radiation, 3/8 eventually required enucleation. Higher cyclosporin levels were associated with better outcome. Three eyes that had failed chemotherapy without cyclosporin, responded to the same chemotherapy with cyclosporin, but one eventually required radiation for control.
Conclusions: Intraocular retinoblastoma, even vitreous seeds, can be controlled by chemotherapy with cyclosporin and focal therapy, without the use of radiation.

PRIMARY CHEMOTHERAPY IN GENETIC RETINOBLASTOMA.

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Saint Bartholomew's Hospital, London, UK

Purpose: In our institution, lens sparing external beam radiotherapy has been used very successfully for the treatment of children with Reese Ellsworth grade 1 and 2 posterior polar tumours. However radiation of the orbit in very young infants is associated with significant hypoplasia of the orbital bones and soft tissues and is thought to increase the risk of development of a second malignancy in children with a cancer predisposition gene.

Method: Since September 1994, we have treated four infants with familial retinoblastoma and early onset disease, by primary chemotherapy. The age at diagnosis of these infants ranged between two weeks to four months. Vascular access was obtained via a percutaneously placed central line ensuring safe administration of the chemotherapy and ready access for supportive care.

Results: The tumours in all four children showed a complete response to chemotherapy. Subsequently, two children developed new tumours but these were amenable to cryotherapy. To date, with a follow-up ranging between 8 and 16 months, none of the four infants has required radiotherapy.

Conclusion: In an attempt to reduce the morbidity associated with external beam irradiation, our current practice is to recommend primary chemotherapy for infants with genetic retinoblastoma presenting with small, posterior tumours.

EFFICACY AND TOXITY OF NEOADJUVANT CHEMOTHERAPY (CT) USING ETOPOSIDE (VP16) AND CARBOPLATIN IN 20 PATIENTS (PTS) WITH INTRAOCULAR RETINOBLASTOMA (IORB).

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Institut Curie, Paris, France.

Purpose: Given the efficacy of the combination VP-16 and Carboplatin in extraocular retinoblastoma, we tested the same CT as initial treatment of intraocular tumors.
Methods: Between 07/94 and 09/95, 20 pts, presenting IORB not treatable by conservative ophthalmologic approach, were included. Their median age was 9 months (1-54). They presented bilateral (17) or unilateral (3) RB. 35 eyes (e) were treated: Reese group was I (1 e), II (I e), III (8 e), IV (4 e) of V (21 e); retinal detachment was observed in 11 e. Two courses were delivered at 3 weeks interval and evaluation was performed 6 weeks after initiation of CT.
Results: Complete fragmentation (F) of tumors was observed in 8 e, partial F in 10 e. Complete retinal reapplication was observed in 6 e; decreasing of vitreous seeding (VS) was observed in 2 e. In 3 e, VS progressed or appeared. New e tumors were observed twice. After CT, external beam radiotherapy (EBR) could be avoided in 7 e in 6 pts. Decreased tumor size before EBR was observed in 14 e of 10 pts. Secondary enucleation was performed in 5 pts showing no or minimal extraretinal extension. Toxicity of CT was registered for 40 courses. No toxic death occurred. Transfusion of platelets was necessary in 3 courses and of erythrocytes in 7. Grade IV neutropenia was observed in 23 courses with a median duration of 10 d. Hospitalisation for infectious problems was necessary in 9 courses.
Conclusions: This drug combination is highly effective in IORB. The toxicity is acceptable. The benefit is clear for posterior pole tumors which become accessible to local treatments avoiding EBR. Visual benefit for bilateral V group needs to be proven. The risk of second tumour might be potentialised with this treatment in heritable retinoblastoma.

PRESENTATION OF RETINOBLASTOMA AS PHTHISIS BULBI.

ZA Karcioglu, PB Mullaney, SA Al-Mesfer, EB Abboud.

King Khaled Eye Specialist Hospital, Riyadh, Kingdom of Saudi Arabia.

Purpose: The purpose of this work was to determine the incidence of retinoblastoma (rb) patients who present with phthisis bulbi (pb) and review the clinical, radiological and histopathological characteristics of these cases.
Method: The medical records of 272 rb patients in the King Khaled Eye Specialist Hospital were retrospectively studied. Ten patients fulfilled the selection criteria. Clinical records, radiologic material and histopathological slides were reviewed.
Reults: Five of ten patients had bilateral rb and the others were unilateral. History of ocular swelling and inflammation preceding the onset of pb was related by six of eight parents questioned. Intraocular medial opacification precluding posterior segment examination was present in nine of ten patients. Radiologically, typical intraocular masses were usually not observed in these eyes; however, calcification was present in all except one case. All enucleated phthisical globes had residual viable tumor cells; optic nerve extension was found in two patients. Two children have since died of metastatic rb, one who refused enucleation, the other as a result of contralateral ocular disease.
Conclusion: Our conclusion was that pb is an uncommon presenting sign of rb which often occurs after an ocular inflammatory episode possibly related to intraocular tumor infarction. In most cases, the tumor is not visible because of intraocular disruption. Radiologically, rb calcification may be difficult to distinguish from intraocular calcification often encountered in phthisis due to other causes. That every enucleated eye in this series harbored viable tumor cells underlies the seriousness with which pb of unknown origin in children should be investigated for rb.

THE RETINOBLASTOMA FAMILY ASSOCIATION

Lisa McCarthy, H. McQuigge, S. Croft, A. Bacopolis, Dr. B. Gallie, B. McCarthy

Retinoblastoma Family Association, Ontario, Canada

Purpose: It is the purpose of the Retinoblastoma Family Association to enhance the well-being of persons affected by retinoblastoma and their families. The Association offers the assembly and dissemination of information about retinoblastoma and the services available to persons affected by the disease, as well as offering support to retinoblastoma patients and their families.

Method: The Retinoblastoma Family Association was formed in 1986 by parents of retinoblastoma patients. The Association publishes quarterly annual meetings at The Hospital for Sick Children in Toronto, is involved in several fundraising activities throughout the year, uses a telephone tree referral system as well as a visitation program for newly diagnosed families.

Results: The membership of the Association has grown to approximately 150 individual families and health care professionals. Over the past 10 years the Association has raised approximately $50,000 which has been used to form a research fund at The Hospital for Sick Children in Toronto. In addition to this fund, small donations have been made to individual families, on a needs assessment basis, to reduce the financial burdens associated with retinoblastoma.

Conclusions: Along with fund raising, the most valuable work of the Association continues to be to provide self-help and support to the membership. The group connects distraught parents with a supportive and understanding voice, presenting to new parents and possibilities and not just the obstacles that await their child.

LECTURES IN THE RUINS AT PORT ARTHUR:
11.30 AND REPEATED AT 2.30 (FOR ONE HOUR)

THE USE OF HISTORIC RECORDS IN GENETIC RESEARCH
David Mackey
Maree Ring
Elise Heon
Other Speakers

FRANCESCHETTI LECTURE

HEREDITARY RETINAL DYSTROPHIES

Alan C Bird

PHENOTYPIC DIFFERENCES BETWEEN RP2 AND RP3, DO THEY EXIST

Christina Flaxel, Alan Bird

Moorfields Eye Hospital, LONDON;

Purpose and Method: Two genetic loci of X-linked retinitis pigmentosa (XLRP) are known "RP2" and "RP3". Phenotypic features reported to differentiate RP2 from RP3 including a higher prevalence of myopia and greater cone dysfunction in RP2 , and later onset of night blindness in RP3. To verify these differences we examined affected males and obligate carrier females from XLRP families which had been assigned to either RP2 or RP3 by genetic analysis.

Results and Conclusions: No clear phenotypic differences were found between RP2 and RP3 with respect to myopia, the age of onset of night blindness and the presence of primary cone dysfunction, and the tapetal reflexes exist in carriers of both RP2 and RP3.

OCULAR ABNORMALITIES IN THIN BASEMENT MEMBRANE DISEASE (TBMD).

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Purpose: Alport syndrome is an inherited disease that results in renal failure and ocular abnormalities including anterior lenticonus and a dot-and-fleck retinopathy. The ultrastructural appearance of the glomerular basement membrane in another inherited disease, Thin basement membrane disease (TBMD) resembles that seen in early Alport syndrome. The aim of this study was to determine whether patients with TBMD have any ocular abnormalities in particular those characteristic of Alport syndrome.

Methods: The eyes of 17 unrelated individuals with TBMD were studied by slit lamp, biomicroscopic examination with 78D lens, direct ophthalmoscopy and fundal photographs. The findings were compared with those in patients with Alport syndrome, IgA glomerulonephritis, Autosomal dominant polycystic kidney disease, ophthalmology clinic attendees and normal individuals.

Results: No patient with TBMD had anterior lenticonus or a dot-and-fleck retinopathy. A corneal dystrophy (n=2) or pigmentation (n=1), and retinal pigment epithelial clumping and maculopathy (n=1) were noted. Corneal, lens and retinal dots were found in 5 (29%), 3 (18%) and 16 (94%) patients respectively, but these were also demonstrated in individuals with other renal diseases and in normals. In particular the retinal dots in TBMD were distinguished from the dot-and-fleck retinopathy of Alport syndrome by their smaller size and well-circumscribed margins. These dots did not enhance with fluorescein angiography and were associated with normal electroretinography. In any individual with TBMD the number of retinal dots did not correlate with the number of urinary RBC/ml, the amount of proteinuria or the presence of hypertension. These dots are probably degenerating retinal pigment epithelial cells.

Conclusions: Anterior lenticonus and a dot-and-fleck retinopathy were not observed in individuals with TBMD. It is not clear whether other ocular abnormalities were coincidental or caused by the underlying genetic abnormality. However, a corneal dystrophy was noted in 2 patients with TBMD and in none of the 21 individuals with renal disease other than Alport syndrome. The lower frequency of ocular abnormalities in TBMD than in Aport syndrome may be because the abnormal protein in TBMD is more sparsely-distributed in the basement membranes of the eye than in the kidney, the abnormal protein may be part of a less important structure in the eyes than in the kidneys or it may be less affected by the autosomal dominant inheritance of TBMD.

EFFECT OF AGE IN INTERPRETING THE ELECTRORETINOGRAM.

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[1]Department of Ophthalmology, Hospital for Sick Children; [2]University of Toronto; Toronto, Ontario, Canada.

Purpose: To identify the normal development of ERG parameters with age.
Methods: ERGs were measured in 71 subjects from 10 days to 40 years of age. Dark and light adapted ERGs were recorded to a predetermined range of stimulus intensities using International Society for Clinical Electrophysiology of Vision (ISCEV) standards.
Results: Latencies of ERG components (a-wave, b-wave, oscillatory potential and flicker) stabilise by 2 1/2 years of age. Amplitudes stabilise by 5 years of age. Oscillatory potentials increase by 1log unit (10 times) between 1 month and 15 years of age, whereas b-wave amplitude increases by log.12 (1.3 times) during the same time period.
Conclusion: All ERG parameters change with age. Therefore to prevent the misdiagnosis of retinal disease, ERG data always must be compared with age-matched control data especially in children under 5 years of age.

SPIELMEYER-VOGT DISEASE.

S. Merin.

Department of Ophthalmology, Hadassah University Hospital, Jerusalem, Israel.

Three siblings suffering from the juvenile variant of Neuronal-Ceroid-Lipofuscinosis (Spielmeyer-Vogt disease) are described. The diagnosis was based on the typical clinical manifestation and progression and on electrophysiological tests. It was confirmed by electron-microscopic examination of a conjunctival biopsy.

The youngest sibling was diagnosed at the early asymptomatic stage. The efficacy of the treatment given today, consisting of polyunsaturated fatty acids (PUFA) and antioxidants (Vitamin E) was not established. However, its administration at the asymptomatic stage may be of preventive value.

Neuronal ceroid lipofuscinoses are probably much more common than diagnosed. It is the ophthalmologist who should be able to make a firm diagnosis.

ALSTRÖM SYNDROME: A REVIEW OF CLINICAL FEATURES.

I Russell-Eggitt[1], P Clayton[1], B Coffey[1], A Kriss[1], A Moore[2], M Pembrey[1], W Reardon[1], D Taylor[1], J Taylor[1]

[1]Great Ormond Street Hospital for Children, London UK, [2]Addenbrookes Hospital, Cambridge and Moorfields Eye Hospital, London UK.

We have seen 18 cases of the rare Alström syndrome in the last 6 years at GOS. These are from 10 unrelated families. This syndrome is often not recognised in childhood as although there is a severe congenital retinal dystrophy, the sensorineural deafness does not present until school age and the diabetes in the second decade or later. The Halifax group recognised that the transient cardiomyopathy in infancy was a feature of Alström and we found this to be common in our patients. The clinical findings have led us to suspect that this may represent a disorder of mitochondrial function. McKusick (MIM 203800) list the inheritance as autosomal recessive. The pedigree in the original paper published by Alström would be equally consistent with mitochondrial inheritance.

FABRY DISEASE - CLINICAL, MOLECULAR AND COUNSELLING CORRELATES.

R.V. Jamieson[1], M. Flaherty[2], C.P. Morris[3], P.V. Nelson[3], M. Smith[1], M. Wilson[1] and W.F. Carey[3].

Departments of Medical Genetics[1] & Ophthalmology[2], The New Children's Hospital, Sydney, NSW, Australia and Department of Chemical Pathology[3], Women's and Children's Hospital, Adelaide, SA, Australia.

Purpose: Fabry disease is an X-linked recessive disorder caused by deficiency of the enzyme α-galactosidase A (α-gal). Affected males develop acroparesthesia, angiokeratoma, renal failure, cardiac and cerebrovascular disease, vortex keratopathy and cataracts. Female carriers show variation in symptoms due to random X-inactivation. Carrier detection can be performed by measurement of α-gal levels in individual hair roots, however this is laborious and does not give an unequivocal result. The α-gal gene has been sequenced and a number of mutations have been characterized. α-gal mutation analysis was performed in this family to provide an accurate, rapid test for carrier detection.

Method: A 43 year old female was found to have vortex keratopathy on review for myopia. Her 17 year old son had acroparesthesia, angiokeratoma and mild ophthalmic features. His leukocyte α-gal level was markedly reduced. Hair root analysis for α-gal levels in two possible carrier female relatives suggested they were not carriers. Genomic DNA from the affected male was subjected to single-strand conformation polymorphism analysis (SSCP), followed by sequencing.

Results: A change in exon 5 of the α-gal gene was detected by SSCP in the affected male and sequencing indicated a novel mutation resulting in the alteration of a cysteine at amino acid position 223 to a tyrosine (C223Y). Sequencing in this region showed that his mother carried this mutation, an unaffected uncle did not and the two probable non-carrier females did not. Other possible carrier females may now be offered testing.

Conclusion: α-gal mutation analysis in Fabry disease allows more rapid and accurate carrier detection while recognition of the clinical features remains critical, and both are necessary to provide accurate genetic counselling.

AUTOSOMAL RECESSIVE INHERITANCE OF HALLERMANN-STREIFF SYNDROME.

Johan Zwaan.

King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia.

The Hallerman-Streiff syndrome is characterised by several eye findings: microcornea, microphthalmia and cataracts which may be resorbed spontaneously. Systematic anomalies include short stature, dyscephaly with beaked nose and micrognathia, and localised hypotrichosis. Dental anomalies are present and the skin tends to be atrophic. Most cases reported have been sporadic and the cause of the syndrome is unknown. There have been reports of familial occurrence, but a close scrutiny of these reveals that either the reported patients did not have Hallerman-Streiff syndrome or the condition was inadequately documented (see also Cohen, Am J Med Genet 1991; 41:488-499). This report concerns a large Saudia Arabian family with multiple intermarriages. Three female cousins in this family had classical Hallerman-Streiff syndrome. The inheritance pattern is compatible with autosomal recessive inheritance.

A NEW SYNDROME WITH UNUSUAL CRANIOFACIAL ANOMALIES AND Y-SUTURE CATARACTS.

Johan Zwaan.

King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia.

The propositus is a 2 year old girl with reduced vision secondary to cataracts. The lenses had a posterior Y-sutural cataract and punctate opacities throughout the lens. The cataracts rapidly became much denser and within a month surgery became necessary. The Y-suture and the remainder of the lens were collected separately; the first was heavily calcified, the cortex showed granular small calcium deposits. The child had other anomalies: low set ears, a high palate, mandibular hypoplasia and sparse head hair. An unusual craniofacial anomaly was present with a huge open anterior fontanel, high orbital roofs and wide open sagittal and metopic sutures.

The parents, who are double first cousins, do not have the syndrome, but 3 brothers have the same combination of findings. Three other siblings are normal. A variety of laboratory tests have been normal. A study to identify the gene involved has been initiated.

In conclusion, a new autosomal recessive syndrome is reported with sutural cataracts and an unusual craniofacial anomaly. I have been unable to find a description of this combination in the literature.

CLINICAL EVALUATION OF ACCOMPANYING OCULAR AND SYSTEMIC ANOMALIES IN CHARGE ASSOCIATION.

Eiji Toumoto, Hironori Ozeki, Akio Majima.

Department of Ophthalmology, Nagoya City University Medical School, Nagoya, Japan.

Among 72 cases with congenital ocular coloboma encountered at Nagoya City University Hospital during the past 14 years, 13 cases were diagnosed as having CHARGE association. In this study, we evaluated 11 cases with ocular and/or systemic anomalies besides the seven major features of this association. The ocular anomalies of these 11 patients included five cases of persistent pupillary membrane, and one case each of posterior embryotoxon, peripapillary staphyloma and congenital cataract. Associated systemic anomalies included five cases of facial palsy, four cases of cleft lip and/or high palate, high arched palate and micrognathia, and one case each of laryngomalacia and DiGeorge's syndrome. Since many of these accompanying ocular and systemic anomalies were detected in the tissues derived from neural crest cells, CHARGE association might arise from maldevelopment of the neural crest.

CARUNCLE ABNORMALITIES IN OCULO-AURICULO-VERTEBRAL SPECTRUM (OAV).

N Nijhawan, J Siegel-Bartelt, AV Levin.

The Hospital for Sick Children, Toronto, Ontario, Canada.

Purpose: OAV is believed to be caused by defective development of the 1st and 2nd brachial arches and the 1st brachial clefts during weeks 4-8 of embryologic development. There are only 3 previous reports of abnormal caruncles in OAV.
Methods: We report a consecutive series of 7 OAV patients with caruncular malformation.
Results: We report dysplastic and/or bilobed caruncles (2) and ectopic caruncles (2 bilateral and 3 unilateral). This series had an unusually high incidence of nasal involvement (5/7).
Conclusion: Our experience suggests that the incidence of caruncular malformations in OAV is higher than previously reported. Linking abnormalities in months 1-2 of gestation causing OAV with malformations of the caruncles, which normally develop in month 3, may offer clues to the pathogenesis of OAV.

GEOGRAPHIC AND GENETIC MAPPING OF A GENE FOR MICROPHTHALMIA, CATARACTS AND DWARFISM IN PATIENTS FROM ISOLATED COMMUNITIES ON THE SOUTH COAST OF NEWFOUNDLAND.

Jane Green[1], Mary O'Driscoll[1], Inge de Becker[2], Ban Younghusband[1].

[1]Faculty of Medicine, Memorial University, St John's, NF, Canada; [2]Izaak Walton Killam Hospital, Halifax, NS, Canada.

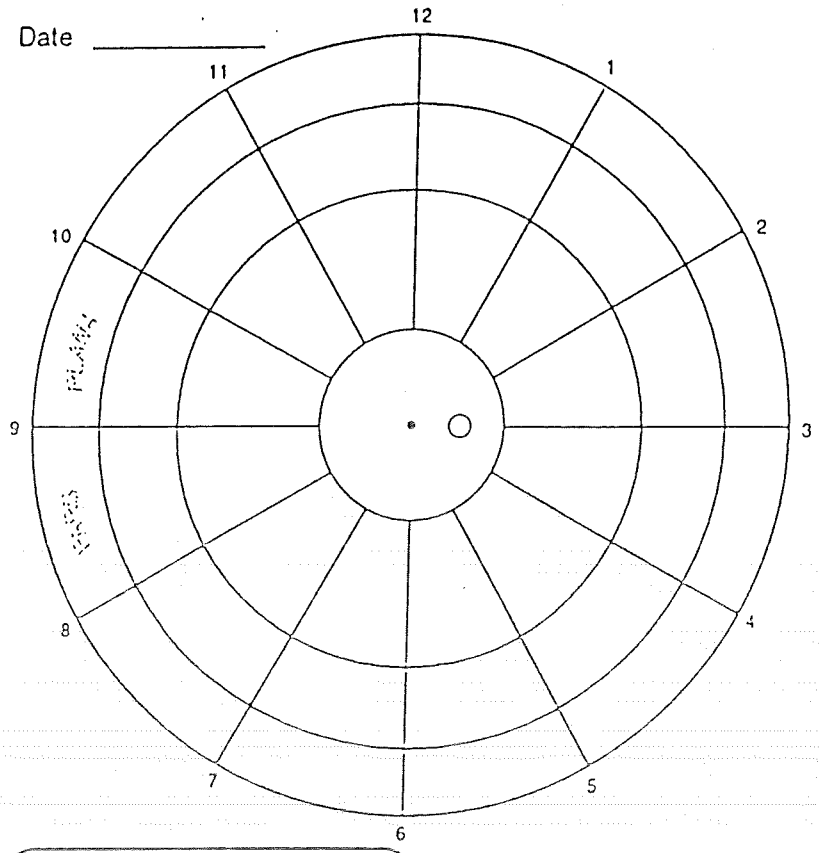
Purpose and Method: Four individuals (1 female and 3 male) with a syndrome including microphthalmia, cataracts and dwarfism (possibly Hallermann-Streiff syndrome) were identified from the Canadian National Institute of the Blind (CNIB) records. All were from small, isolated communities on the south coast of Newfoundland with a common founding population. We wanted to define the relationship between these patients, and then, if appropriate, to map the relevant gene. Detailed family histories were taken from each proband, and archived church records of births, deaths and marriages from south coast communities were searched in order to extend the pedigrees.

Results and Conclusions: Although a common ancestor was not identified, relationships between the probands were established, and three younger, similarly affected patients were identified. DNA samples were obtained from affected and unaffected family members, and homozygosity mapping using CA repeat markers at 10 cM intervals through the genome is underway.

Institution _____
Ophthalmologist _____
Patient _____
MR# _____Age at Dx_____

Retinoblastoma

Date _____



RE

RIGHT EYE = T___Z___S___
(Largest Individual T, Z and S values

Right Eye Individual Tumor Descriptors

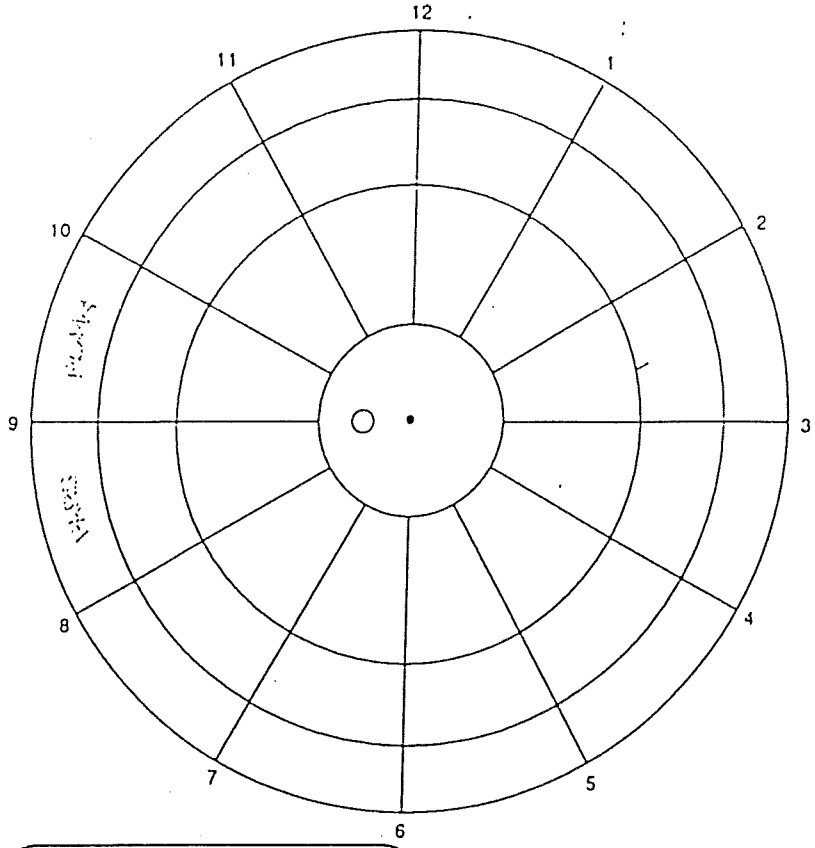
_____ #1 T____Z____S____
_____ #2 T____Z____S____
_____ #3 T____Z____S____
_____ #4 T____Z____S____
_____ #5 T____Z____S____
_____ #6 T____Z____S____
_____ #7 T____Z____S____
_____ #8 T____Z____S____

T = Greatest Diameter
- T1 = >0-3mm (2DD)
- T2 = >3-6mm (4DD)
- T3 =>6-10mm (6.5DD)
- T4 =>10-15mm (10DD)
- T5 =>15-half eye
- T6 =>half eye

Z = Zone of Disease
- Z1 = Ora to equator
- Z2 = Equator to edge of zone 3
- Z3 = 2SD lens centered on fovea
- Z4 = extraretinal (CB, AC)

Zone 3 Modifications
- 3N = tumor within 1DD of nerve
- 3F = tumor within 1DD of fovea
- 3N' = tumor touching or overlying nerve
- 3F' = tumor touching or overlying fovea.

S = Seeding or Tumor Dispersal
- S0 = No vitreous seeding
- S1 = Microscopic cells ant. vit.
- S2 = Gross local vit. seeding
- S3 = Gross diffuse vit. seeding
- S4 = RD, no subret. seeding
- S5 = RD, subret. seeding



LE

LEFT EYE = T___Z___ S___
(Largest Individual T, Z and S values

Left Eye Individual Tumor Descriptors

_____ #1 T____Z____S____
_____ #2 T____Z____S____
_____ #3 T____Z____S____
_____ #4 T____Z____S____
_____ #5 T____Z____S____
_____ #6 T____Z____S____
_____ #7 T____Z____S____
_____ #8 T____Z____S____

THE RETURN OF PHOTOSENSITISERS AND RED LIGHT AS A TREATMENT MODALITY FOR SMALL PRIMARY OR RECURRENT RETINOBLASTOMAS.

A.L. Murphree, J. Levy, C.J.Gomer.

Childrens Hospital Los Angeles and the University of Southern California, Los Angeles and QLT PhotoTherapeutics Inc., Vancouver, British Columbia.

In the early 1980s, two of us (ALM and CJG) treated a small number of retinoblastoma and choroidal melanomas with haematoporphyrin derivative (HPD) and red light (photodynamic therapy). The results were encouraging (Murphree, Cote and Gomer, *Photochemistry and Photobiology* 46(5):919-925, 1987). The treatment was generally successful in killing the tumours (one 8mm high choroidal melanoma developed local recurrence 12 years following treatment). The treatments were discontinued, however, because of one significant side-effect of the drug, skin photosensitivity. Individuals treated with HPD had to stay out of sunlight and daylight for 3-4 weeks after HPD injection.

Recently, a derivative of HPD, known as benzoporphyrin or BPD, has been made available for use in the eye and other sites. It is a very short acting photosensitiser, can be given only 30 minutes prior to treatment, and is cleared from the body within two days. It is currently under clinical trial in Boston for the experimental treatment of age-related macular degeneration.

As soon as IRB approval is final, Group 1 and edge recurrent retinoblastoma will be targets of BPD therapy consisting of the drug followed by 690nm red light. We anticipate, based on our previous experience with the porphyrin photosensitisers, that BPD may replace single agent Carboplatin + heat as effective treatment of small discrete tumours without the side-effects of carboplatin haematoxicity.

NEW CONCEPTS IN THE MANAGEMENT OF RETINOBLASTOMA.

L. Desjardins, F. Doz, C. Levy, E. Quintana, J.M. Zucker, P. Validire, P. Schlienger.

Institut Curie, Paris, France.

Purpose: Recent improvements in chemotherapy of retinoblastoma allows us to use this treatment in intraocular tumors. VP16 Carbo combination has proved to be very effective in extraocular retinoblastoma and is indeed effective in intraocular retinoblastoma. During the same period it was emphasised that the secondary effects of radiotherapy in young babies are important and that radiotherapy can cause second cancers in these patients.

Method: Since 1994, major changes in the treatment of retinoblastoma have occurred. The use of primary chemotherapy combined with cryotherapy, photocoagulation, I 125 plaques and combined Carboplatine with diode laser allows us to avoid radiotherapy in many cases.

Results and Conclusion: We shall present a series of 15 patients with 17 eyes treated with diode laser in combination with Carboplatine. We shall give our indications for this treatment, technical considerations and preliminary results. Despite the fact that our follow up is short, we think that Carboplatine associated with diode laser hyperthermia is a valuable treatment for small to medium size retinoblastoma.

TREATMENT OF RETINOBLASTOMA VITREOUS BASE SEEDING.

Steven A. Madreperla, MD, PhD,[1,4] John L. Hungerford, FRCS, FRCOphth,[1] David Doughty MSc,[2] P. Nicholas Plowman, MD, FRCP, FRCR,[2] Judith E. Kingston, FRCP,[3] Arun D. Singh, FRCOPTH[1].

Departments of [1]Ocular Oncology, [2]Radiotherapy, [3]Pediatric Oncology, St. Bartholomew's Hospital London, England [4]Department of Ophthalmology, University Hospitals Cleveland, Ohio, USA.

A new treatment for vitreous base seeding of retinoblastoma has been developed. Five eyes of five patients with adequate follow-up and with vitreous base seeding that occurred after previous external beam radiotherapy were treated with a customized plaque made from Iridium-192/platinum wire placed to deliver 4000 cGy to the tumor apex along its entire length and with systemic chemotherapy (carboplatin, vincristine, etopiside). Vitreous base seeding was completely controlled in four of the five treated eyes with an average follow-up of 19.6 months. The combination of a customized, Iridium-192 plaque and systemic chemotherapy is an effective means of treating vitreous base seeding of retinoblastoma.

RETINOBLASTOMA IN TWINS.

ZA Karcioglu, SA Al-Mesfer, PB Mullaney, SH Senft.

King Khaled Eye Specialist Hospital, Riyadh, Kingdom of Saudi Arabia.

Purpose and Method: The purpose of this presentation is to review 2 sets of twins, one of which was monozygotic, with retinoblastoma. These cases are a unique group within 272 retinoblastoma patients which have been admitted to King Khaled Eye Specialist Hospital in Riyadh, Saudi Arabia, between the years of 1983 and 1995.
Results and Conclusion: The monozygotic twins had bilateral disease which was diagnosed within the first month of life because of a strong family history of retinoblastoma. The father's one eye was enucleated at the age of 3 years; the mother did not have any eye disease. Three other siblings of the family were also stricken with retinoblastoma; one of which died of metastatic disease. In the other set of twins, only one had unilateral disease for which she was treated with enucleation with post-operative radiation; she was free of any disease 8 years after treatment. Clinical features, management and prognosis of the cases will be presented and the genetic aspects of this occurrence will be discussed.

LARGE IN-FRAME DELETION IN RB1 IN A LOW PENETRANCE FAMILY.

BL Gallie, D Du, JM Dunn, R Bremner.

Department of Ophthalmology and The Eye Research Institute of Canada, University of Toronto, Toronto, Canada.

Purpose: To characterize the RB1 mutation in a low penetrance family.
Methods: Quantitative multiplex PCR was used to determine the exons showing low copy number in affected individuals, and subsequently to test unknown family members. Long-PCR characterized the size of the deletion. The junction fragment was subcloned and sequenced. Expression of the mutant allele was studied in lymphoblasts from mutation carriers. Wild type and mutant RB1 alleles were expressed in test cells to determine nuclear localization, growth suppression and ability to bind to nuclear factors and E1A.
Results: The RB1 mutation was an in-frame 4 kb deletion including exons 24 and 25 (D24,25). Penetrance (60%) and expressivity (30%) indicated that this allele produced fewer tumors than the usual RB1 mutation. Both mRNA and protein from the deleted allele were detected in lymphoblasts. The truncated protein (D amino acids 830-877) bound normally to several nuclear factors and E1A, but failed to localize in the nucleus, consistent with the nuclear localization signal of RB1 being in exon 25. In growth suppression assays in sensitive cells, D24,25 behaved more like wild type than an inactive RB1 allele.
Conclusion: D24,25 is a low penetrance RB1 allele that produces a protein with many normal functions, but defective nuclear localization.

INTRAOCULAR RETINOBLASTOMA: SYSTEMIC CHEMOTHERAPY WITH CARBO + VP16 +VCR.

Clélia M Erwenne, Célia G Antoneli, Renate F de Souza, Sung Bok Cha, Martha M M Chojniak.

A.C. Camargo Hospital-António Prudente Foundation, São Paulo, Brazil.

Seven RB (virgins of drug therapy) and 2 normal eyes from 5 patients (age 7-34 months) were submitted to a periodic evaluation (fundus, retinography and ultrasound) during a CARBO + VP16 + VCR chemotherapy. All RB eyes had a t minimum 1 tumour larger than 10mm diameter. The chemotherapy was done in 4 cycles (30 day interval) : Carboplatin 200mg/m^2/day 1, 2, 3; VP16 150mg/m^2/day 1, 2, 3; Vincristine 1 6mg/m^2/day 1. All RB eyes had changed: growth stopped in 6 and the increase of calcium in all. One eye needed enucleation. Complementary treatment with laser and cryo were necessary in the 6 conserved eyes (follow-up 1-6 months). No changes registered in the 2 normal eyes. Controlled plaquetopenia occurred. The authors consider this schedule an improvement in the treatment of intraocular RB.

TREATMENT OF ADVERSE HISTOLOGY FOLLOWING ENUCLEATION FOR RETINOBLASTOMA.

Hungerford JL, Kingston JE, Plowman PN.

Saint Bartholomew's Hospital, London, UK

Purpose: Prior to 1985, 14 out of 22 (63%) of children died from metastases following enucleation for retinoblastoma in London when histological examination of the enucleated eye revealed evidence of major choroidal invasion or retrolaminar optic nerve invasion. By contrast, in children whose enucleated eyes did not show these adverse histological risk factors, the metastatic mortality rate was less than 2%.
Method: From 1985, children with adverse histology have been selected for adjunctive treatment following enucleation. All children have received chemotherapy with vincristine, etoposide and platinum. Children in whom retrolaminar optic nerve invasion extended to the surgical resection margin have additionally received orbital radiotherapy and triple intrathecal therapy.
Results: None (0%) of 31 children so treated have died.
Conclusion: Careful and prompt evaluation of the histology of eyes enucleated for retinoblastoma assumes greater importance now that an early decision must be reached whether or not adjunctive treatment is to be recommended.

UNUSUAL SECOND MONOCULAR TUMOR IN CURED SPORADIC UNILATERAL UNIFOCAL RETINOBLASTOMA (RB) PATIENT: CASE REPORT.

Antoneli CBG, Seber A, Castro AS, Erwenne C, Bianchi A.

A.C. Camargo Hospital-António Prudente Foundation, São Paulo, Brazil.

Bilateral or unilateral multifocal and 10% of the unilateral tumours are considered hereditary. The incidence of second tumours among survivors of the hereditable form can reach 90% at 30 years after the initial diagnosis of RB. Few cases of second tumours have been found in non-irradiated and non-hereditary cases.
A 20 months old white boy had for 16 months a leukocoria in his left eye that was enucleated. Histology revealed intraocular RB without optic nerve involvement. He did not receive any further therapy other than 10 cycles of Vincristine and cyclophosphamide.
He received three intramuscular injections of β-subunit of human chronic gonadotropin hormone for retractile testes when he was 6 years old. One month later he began progressive virilization, increase in breadth of the penis and curled hair. Chest X-ray showed a mass in the left hilus and CT showed an anterior mediastinal mass. Complete resection of the mass was performed and the pathological finding was a mature teratoma with areas of Leydig cells tumour. Stain for β HCG was negative. Days after surgery we noticed improvement in all clinical findings.

DIFFERENTIATION AND IMMUNOGLOBULIN SUPERFAMILY ANTIGEN MODULATION BY *ALL-TRANS* RETINOIC ACID ON HUMAN Y-79 RETINOBLASTOMA CELL LINE.

MC Madigan[1], RM Conway[1], NJC King[2], FA Billson[1], PL Penfold[1].

[1]Department of Clinical Ophthalmology; [2]Department of Pathology, University of Sydney, NSW, Australia.

Purpose: To investigate the effect of *all-trans* retinoic acid (RA) on growth, differentiation and expression of immunoglobulin (Ig) superfamily antigens, MHC class I and II, NACM, ICAM-1 and Thy-1, on the human Y-79 retinoblastoma (Rb) cell line.
Methods: Suspension and attachment cultures of Y-79 cells were treated with RA for up to 10 days. Morphologic features following RA treatment were examined using immunohistochemistry and light microscopy. Modulation of Ig superfamily antigen expression on RA-treated cells was measured at 1, 3, 5, 7 and 10 days by flow cytometric analysis and compared to controls.
Results: In attachment cultures, RA treatment induced marked morphological changes with extension of prominent neurite-like processes from cells, accompanied by a dose-dependent growth inhibition without loss of cell viability. Associated with these changes, RA induced a dose-dependent increase in cell surface expression of MHC class I, and cell adhesion-associated molecules, NCAM, ICAM-1 and Thy-1, which was maximal with 10^{-5} M RA.
Conclusions: These results indicated that RA-induced upregulation of adhesion molecules and MHC class I, was associated with differentiation of Y-79 cells, suggesting a role for RA in Rb tumour growth and development.

3D ULTRASOUND DOCUMENTATION OF RETINOBLASTOMA TUMOR VOLUME.

L. MacKeen, A. Budning, M. Contractor, Y. Ling, B.L. Gallie.

Department of Ophthalmology, Hospital for Sick Children, and the Eye Research Institute of Canada, University of Toronto, Toronto, Canada.

Purpose: To assess the reproducibility of 3D ultrasound in monitoring retinoblastoma tumors.
Methods: At initial diagnosis and during the course of chemotherapy for intraocular retinoblastoma, 3D images of the eye were reconstructed from the 200 images/scan captured using the Ophthalmic Technologies Inc ocular ultrasound. Volume was determined for each tumor 6 times by each of three observers. Ten eyes of 9 patients were studied.
Results: Volume measurements were accurate with standard deviation of 5 - 10% of the mean value. Initial response to chemotherapy induced 5-fold reduction in the largest tumors (ie, 1000 to 200 mm3), which was easily documented on 3D ultrasound. Subsequent changes in tumor volume were less dramatic. Early recurrences documented by indirect ophthalmoscopy were generally below the level of resolution of the 3D ultrasound.
Conclusions: Volume determination by 3D ultrasound is effective to document initial responses to therapy for large intraocular retinoblastoma tumors. Once tumors have shrunk to allow a clear view, indirect ophthalmoscopy is more useful to pick up early recurrences amenable to focal therapy.

INTRAOCULAR RETINOBLASTOMA: SYSTEMIC CHEMOTHERAPY WITH CARBO + VP16 +VCR IN PRE-TREATED EYES.

Clélia M Erwenne, Célia G Antoneli, Renate F de Souza, Sung Bok Cha, Martha M M Chojniak.

A.C. Camargo Hospital-António Prudente Foundation, São Paulo, Brazil.

Five RB eyes with multiple lesions received RXT and multiple sessions of photocoagulation and cryotherapy without tumour control. All eyes had a minimum of one lesion larger than 10mm diameter. As a last resort we tried a systemic chemotherapy with carboplatin 200mg/m^2/day 1, 2, 3; VP16 150mg/m^2/day 1,2,3; Vincristine 1 5mg/m^2/day in 4 cycles (30 day interval). Periodic evaluation of fundus ophthalmoscopy and ultrasonography were done. After 2-4 months from the end of chemotherapy 3 eyes needed enucleation (anterior chamber infiltration in 2 and total retinal detachment in 1). In the other 2 eyes we noticed reduction in the size of the tumour with increased calcification without total atrophy (follow-up 6 and 12 months). The authors do not consider this schedule really efficient in pre-treated eyes.

PREFERENCE FOR SCREENING OPTIONS OF RETINOBLASTOMA

B.L. Gallie[1], H.Z. Noorani[1], A.S. Detsky[2].

[1]Departments of Ophthalmology, Molecular and Medical Genetics; [2]Health Administration and Medicine; University of Toronto, Toronto, Canada.

Purpose: To estimate family and professional preferences for bilateral retinoblastoma and its alternative screening options, and assess how preferences vary between study groups.

Methods: Subjects quantified their preferences (utilities) for scenarios relating to bilateral retinoblastoma (RB), molecular RB1 mutation identification (M), and conventional screening for retinoblastoma tumours (C) relative to perfect health (PH) and death (D). First, they ranked the scenarios in descending order of preference. Second, they rated them on a linear scale. Third, they participated in hypothetical gambles in which they indicated how much they would risk to avoid each scenario.

Results: The results are based on pilot data for ten at-risk families. Rank ordering: 7 (of) 10 ranked the scenarios in the descending order PH, M, C, RB, D. Of the remaining three families, each ranked the scenarios differently relative to PH and D (M, RB, C; C, M RB; C, M, RB). Gambles: mean values of 0.887 for RB, 0.983 for M, and 0.981 for C in relation to values of 1 for PH and 0 for D.

Conclusions: Preliminary analyses show that the values obtained for the molecular route are generally higher than those of conventional screening for retinoblastoma tumours; expressed preferences, however, are strongly influenced by a family's particular experiences, beliefs and perceptions.

THE ROLE OF TELEMEDICINE IN HEALTH CARE DELIVERY SYSTEMS OF THE FUTURE

A.L. Murphree, R. Ryan, E.S. Moselely III.

Teliatrics Inc, Los Angeles, California

In the United States, there have been major changes in the health care delivery system over the last 10 years with California leading the move into managed care. The major concerns about American Health Care are three: cost, availability and quality. Managed care has addressed cost by limiting availability and by shifting the physician incentive from the delivery to the limiting of health care. Under managed care, capitation places the physician into the position of generating income by delivering as little care as possible.

Twenty years ago, the availability of health care was addressed by training more physicians. That solution has not worked because most physicians congregate in cities. Competition has driven up prices!

In other industries, such as airlines, banks and insurance companies, computerisation of the primary business has been essential to meet customers' needs related to cost, availability and quality, while at the same time, staying competitive and profitable. Medicine has computerised only the business and appointment/scheduling components. One of the reasons medicine has made little progress in its core business is that, unlike in these other industries where text is the primary information stored, in medicine images, sound and video are all necessary for diagnoses. There have been no available databases and network solutions capable of handling such huge data files easily until recently.

Telemedicine projects to date have been designed around point-to-point connection and confined to one or a few specialties. Teliatrics, Inc. has been recently organised with major input from database experts and telecommunication specialists. It will attempt to address the needs required to make telemedicine viable internationally.

Retinoblastoma is one of the rare diseases where telemedicine has the potential to be most useful in making expert care both available and affordable.

NORRIE DISEASE IN JAPAN.

Norio Ohba and Yasushi Isashiki.

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Clinical and genetic studies were made on four Japanese families with Norrie disease. Major clinical manifestations consisted of congenital blindness due to vitreoretinal dysplasia. Assessment of the Norrie disease gene revealed: a point mutation at the initiation codon of the exon 2 in two families living in the same area but apparently unrelated; a point mutation at the codon 95 of the exon 3 in another family; yet undefined but probably duplication of the gene in the remaining family. There was no significant clinical-genetic correlation.

ARE ALL MAJOR EYE MALFORMATIONS DUE TO MUTATIONS IN "HOMEOBOX" GENES?

Johan Zwaan.

King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia.

Homeobox genes encode DNA-binding regulatory proteins and control the differentiation of entire regions, such as the brain. Several of these regulating genes are active in the eye or its tissues at certain developmental stages. The mutation of one, Pax-6, has been implicated in the anomalies associated with aniridia. This has led to the idea that other major eye malformations may be due to mutations in homeobox genes.

Early abnormalities in the development of the lens, regardless of whether they are caused by single gene defects, by poisoning of lens cells or by surgical or transgenic manipulation, lead to anomalies in other parts of the eye, such as microphthalmia, sclerocornea, retinal dysplasia and defective iris differentiation, some similar to the deviations seen in aniridia. These can be explained by the disruption of a cascade of tissue interactions, operationally defined by early embryologists as "inductions". These cascade effects may be responsible for some of the widespread actions of homeobox genes.

THE ELECTRORETINOGRAM IN HIGH MYOPIA.

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[1]Department of Ophthalmology, Hospital for Sick Children; [2]University of Toronto; Toronto, Ontario, Canada.

Purpose: To compare ERG parameters in physiologic high myopia to those without high myopia.
Methods: ERGs from 2 groups of adults (15-40 years) were compared. These were I) 18 people with physiological myopia greater than 6 dioptres, ii) 30 people with normal retinal exams without myopia (controls). Dark and light adapted ERGs were recorded to predetermined range of stimulus intensities using International Society for Clinical Electrophysiology of Vision (ISCEV) standards.
Results: Under both scotopic and photopic conditions, the a and b wave amplitudes and oscillatory potentials were reduced significantly in people with high myopia. There was no significant difference in b-wave implicit times compared with the control group.
Conclusion: When retinal disease is suspected in people with high myopia ERGs must be compared with age-matched controls who have high myopia. Myopia is associated with reduced ERG amplitudes, and normal implicit time. Retinal disease is associated with decreased amplitude and most often delayed implicit time.

MEASURING AND ANALYZING THE FULL FIELD PEDIATRIC ELECTRORETINOGRAM.

CM Panton[1], CA Westall[2].

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Purpose: To describe methods of measuring and analyzing full field pediatric ERGs.
Methods: ERGs were measured in 286 children (10 days - 15 years). Dark and light adapted ERGs were recorded to a predetermined range of stimulus intensities using current ISCEV standards.
Results: Successful results were obtained in 97.5% of children by adapting testing protocols to the child's age. Appropriately-sized Burian Allen electrodes were used in all cases. Babies under 1 year were swaddled and tested lying supine, 83% of children between 1 and 5 years were tested in the same way after chloral hydrate sedation. The remainder of this group and those over 5 years sat with a parent or alone. Two testers were required to enhance calmness and compliance of child and parent, to ease lens insertion and to collect data. Data were analyzed by selecting and averaging the largest repeatable epochs and comparing with age-matched controls.
Conclusion: By adapting and refining testing protocols and analysis to different ages, a high level of success can be obtained.

3D ULTRASOUND EVALUATION OF THE OPTIC NERVE AND CHOROIDAL HEMANGIOMA IN STURGE WEBER SYNDROME (SWS).

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Purpose: To use 3D ultrasound to characterise the optic nerve and choroidal hemangioma (CH) in SWS.
Method: 3D ocular ultrasound (OTI) was performed on 5 adolescent SWS patients with CH. Views were obtained of the posterior, mid-peripheral and peripheral aspects of the tumor. The optic nerve and peripapillary region were also imaged.
Results: CH appeared as heterogeneous lesions of variable thickness with sharp peripheral edges and increased thickness in the peripapillary regions. The optic nerve cups were surprisingly deep, not necessarily parallel with the degree of clinical glaucoma.
Conclusions: CH in SWS are not uniform in shape or thickness with characteristic edges and peripapillary thickness. The deep cup seen in the presence of CH may represent a related malformation rather than an effect of glaucoma. This funding has important implications in the management of SWS glaucoma. This is the 1st reported use of 3D ultrasound to evaluate SWS patients.

THE EYE GENETICS TEAM AT THE HOSPITAL FOR SICK CHILDREN.

L. DaSilva, L. Fuccillo, D. DiCiommo, B. Gallie, A. Goldbloom, E. Heon, M. Hyland, A. Levin, S. Lucchetta, L. McCarthy, H. Noorani, C. Panton, J. Picknell, J. Sutherland, C. Westall.

Department of Ophthalmology, Hospital for Sick Children, University of Toronto, and Visible Genetics Inc., Toronto, Canada.

Purpose: To establish a clinical service able to both deliver comprehensive, effective care for patients and families with eye genetic disease, and to expedite research opportunities.

Method: The Eye Genetics Team was initiated in April 1994 with initial, short-term funding from fund-raising efforts by parents, friends of patients, coordinators, genetic counselors, scientists and ophthalmologists. The cost advantage of one molecular diagnostic test over the conventional clinical approach (RB1 mutation identification) was determined. Needs of patients and research opportunities using families with ocular genetic disease were evaluated. Data was presented to the Hospital administration.

Results: The Hospital administration evaluated the needs of patients and families, the research opportunities, and the economics of the Team structure, and allocated appropriate funding to support clinical and research coordinators, a genetic counselor, an electrophysiologist assistant, and, part-time, a social worker and a computer programer. We continue to work to find support for a part-time psychologist. Each member of the Team takes part in the overall planning and long range management of patients. Every appropriate family is given opportunity to contribute to research, with potential benefits.

Conclusions: We documented the benefits of a Team approach to eye genetic disease, and thereby obtained stable funding. We continue to evaluate the clinical and research effectiveness and economy of the team structure.

A PATIENT DATABASE TO MANAGE AND FOLLOW OCULAR GENETICS TEAM PATIENTS.

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Department of Ophthalmology, The Hospital for Sick Children, Toronto, Ontario, Canada.

Purpose: To create an ocular Genetics database to increase efficiency and the quality of care for ocular genetics patients and their families.
Methods: Each team member had input into the creation of a clinical database for the MacIntosh computer using FileMaker Pro 2.1. In addition to basic patient demographics, there are fields for entry of: notes from clinic visits, testing and referrals to be arranged, test results, internal discussion of cases, pedigree highlights, genetic counselling notes, phone log, etc. Patients can also be catalogued for various research project interests, both current and future projects.
Results: We have increased efficiency by having the patients' charts at our fingertips. Each individual on the team can select patients for whom they have to perform a task as a follow-up.
Conclusions: With such a large team, it is essential to be able to access any patient's chart immediately. The most favourable aspect of the database is patients phoning for information will have a sense that the Team member has remembered them personally. This is in keeping with our Team's goal, to increase the quality of care for ocular genetics patients and their families.

THE FAMILY HISTORY PEDIGREE AS A VALUABLE DIAGNOSTIC TOOL FOR THE OPHTHALMOLOGIST.

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Purpose: To demonstrate the importance of a detailed family history as a diagnostic tool.
Method: We will report pedigrees of four patients and how each contributed to the diagnosis of the eye condition present.
Results: A detailed family history obtained prior to the clinical examination should not be underestimated as a diagnostic tool.
Conclusions: The way we classify genetic eye diseases is currently in flux due to our ever-increasing repertoire of molecular causes for each disease. As each new eye gene is described, our knowledge of how genes interact to allow the eye to develop and maintain vision increases. For each low vision patient and their family, knowledge of the causative gene mutation leads to increased accuracy in predicting recurrence risks and prognosis. Predictably, in the not so distant future, ophthalmologists will have to decide which of hundreds of molecular tests to request per patient. All clues will have to be considered.

RECLASSIFICATION OF INTRAOCULAR RETINOBLASTOMA

A.L. Murphree

Childrens Hospital Los Angeles and the University of Southern California, Los Angeles.

Before he died, Bob Ellsworth, on several occasions, encouraged the revision of his classification of intraocular retinoblastoma. In June 1994 at the World Congress of Ophthalmology in Toronto, an all-day meeting was convened with the financial help of the Research To Prevent Blindness, Inc. to evaluate and to consider drafting an update to the Reese/Ellsworth classification system. A great deal of discussion at that meeting and subsequent results in many centres with the effectiveness of chemotherapy in treating intraocular retinoblastoma has led to general agreement on several issues. However, with the possibility of an eventual multi-centre clinical trial to evaluate the response to chemotherapy, it was deemed prudent to delay finalisation of any new classification until those results are in. Several accomplishments of that group in Toronto, however, are likely to be incorporated into any new classification scheme. These are briefly summarised below.

Zones of disease should reflect the oncology standard of increasing severity or likelihood of vision loss as the Zone number increases. Therefore, Zone I was tentatively assigned to that region from the ora serrata to the equator. The boundaries of Zone III were proposed as an oval defined by all points equidistant from a line connecting the centre of the disc and the centre of the fovea. A slightly less complicated, and perhaps more reproducible, Zone III was suggested a s the field of a 28D indirect lens centred on the fovea. Zone II would then encompass that retina between Zones I and III.

"T" values were a suggestion of the oncologists attending the meeting. A "T" value is assigned to each tumour in the eye as the largest tumour diameter (base or height). An "S" value would be assigned to the eye to represent the extent of vitreous or subretinal tumour dispersion. A suggestion was made that official Rb classification drawing pads be developed as an aid in correctly assigning each tumour a "T" and "Z" value.

For the NEI multi-centre clinical trial, RE Group 1 ("T" value of 4DD or 6mm) and "Z" 2 or 3 would be treated at the ocular oncologists's discretion. RE Groups 2-4 ("T" value of >4DD or 6mm) to <half the retina with a "Z" value of 1, 2 or 3 would constitute the arm to be treated with 3 vs. 9 months of CEV + local therapy. RE Groups 5a and 5b, together with any exophytic tumour associated with complete retinal detachment, would be treated as an arm comparing the effectiveness of CEV+ for 9 months with and without cyclosporin. These three groupings may well become Groups 1, 2 and 3 of the new International Classification.

POSTERS WITHOUT TALKS

RANIMUSTINE AND CARBOPLATIN TREATMENT FOR RECURRENT INTRAOCULAR RETINOBLASTOMA WITH VITREOUS SEEDING.

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Department of Ophthalmology, Wakayama Medical College[1] and Kyushu University[2], and Department of Pediatrics, Kyushu University[3], Japan.

Purpose: We report the effective treatment of recurrent retinoblastoma with vitreous seeding by a combination of ranimustine (MCNU) and carboplatin.
Patient: This Japanese patient was diagnosed with bilateral retinoblastoma at age 3 years. Although photocoagulation and radiotherapy were given to the left eye after enucleation of the right eye, a recurrent tumour associated with vitreous seeding developed 6 years later. Chemotherapy with cyclophosphamide and nimustine hydrochloride led to transient decrease of the tumour cells in the vitreous. We then changed the regimen to MCNU (70mg/m^2/day for one day) and carboplatin (400 mg/m^2/day for two days). After 5 such courses, the tumour in the vitreous completely disappeared with no recurrence in the 5 year followup. Myelosuppression, general fatigue and vomiting did occur but were ameliorated with supportive therapy. Nephro-toxicity and oto-toxicity were nil. Visual acuity of the patient is presently 20/200.
Conclusion: This novel drug combination deserves further attention to treat patients with recurrent, or even primary, retinoblastoma.

EXTRAOCULAR RETINOBLASTOMA: TOTAL RESPONSE WITH SYSTEMIC CHEMOTHERAPY - REPORT OF A CASE.

Clélia M Erwenne, Célia G Antoneli, Renate F de Souza, Sung Bok Cha, Martha M M Chojniak.

A.C. Camargo Hospital-António Prudente Foundation, São Paulo, Brazil.

A 6 month old male patient presented: RE - nystagmus, pale retina and coloboma in the disk; LE - proptosis and a big white mass covering the disk and posterior pole extending to the orbit. Liquor and mielo were negative. Chemotherapy was introduced : Iphosphanide 3g/m^2/day 1, 2, 3 plus VP16 150mg/m^2/day 1, 2, 3 in 3 cycles (21 day interval). The tumour had been totally calcified. In the sequence we introduced Cisplatine 90mg/m2/day 1 plus VM26 100mg/m^3/day 2 in alternate cycle with Iphosphanide and VP16 until week 33. From week 34 to 40 we introduced the VAC (21 day interval). During all the treatment we used also Methotrexate IT 12mg/m^2/doses each 6 weeks. Complementary external beam RXT had been done.

HISTOPATHOLOGY OF CELL DEATH, LEUCOCYTIC INFILTRATES AND THE VASCULATURE IN HUMAN RETINOBLASTOMA.

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Introduction: Retinoblastoma (Rb) is the most common intraocular malignancy of childhood, most probably derived from neuroepithelial cells with potential for neuroblastic differentiation. The morphology of Rb cells has been characterised previously, however the histopathology of cell death, leucocytic invasion and the vasculature in Rb have not been studied in detail.

Methods: In this study, 10 Rb biopsy specimens were examined with light and electron microscopy.

Results: Cells at various stages of apoptotic involution were seen in viable tumour areas. Mononuclear phagocyte series (MPS) cells and lymphocytes were often associated, proximal to the tumour vasculature. MPS cells also invested the perivascular space, and were visible within zones of necrosis. Cuffs of viable tumour cells surrounded blood vessels, and vessels at early stages of formation resembled the normal developing retinal vasculature. Müller cells and astrocytes contributed to the formation of the vascular *glia limitans,* which was disrupted in some mature blood vessels. Intercellular spaces between vascular endothelial cells and endothelial fenestrae were occasionally seen.

Conclusions: Overall, these observations indicate a role for immunocompetent cells in cell death and angiogenesis in Rb, and suggest compromise of barrier properties in some vessels in Rb.

ABSENCE OF THE SUPERIOR OBLIQUE TENDON IN THREE GENERATIONS.

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Purpose and Method: Five individuals from three consecutive generations were examined and found to have fourth nerve palsies. Four of the five had bilateral palsies. Surgical exploration of the propositus showed absence of the superior oblique tendon bilaterally.

Results and Conclusion: These findings demonstrate autosomal dominant inheritance of the superior oblique tendon. When one suspects congenital fourth palsy there should be an examination of the family members in search for a genetic pattern.

REORGANISATION OF ANTERIOR PHPV.

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Purpose: To report a case of reorganised anterior persistent hyperplastic primary vitreous (PHPV) which had primarily undergone lensectomy and anterior vitrectomy.
Patient: A 3 weeks old girl revealed right leukocoria and slight microphthalmos. By ultrasound examination, she showed persistent hyaloid artery with retrolental mass.
Surgery: Lensectomy and retrolental mass resection, cauterisation of small blood vessels, dissection of white strand from disc with scissors and anterior vitrectomy. After 3 months, fibrous tissue was regrowing in the pupillary area and made synechiae with pupillary margin. We performed a second operation for resection of membrane and anterior vitrectomy. Surprisingly, the strand from the disc was firmly connected with fibrous membranous mass just like a primary PHPV without blood vessels.
Conclusion: Persistent hyaloid artery and/or tunica vasculosa lentis might play a role organising anterior PHPV.

THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. III THE PHENOTYPE OF THE GLAUCOMA PEDIGREE GTAS1.

J.L.Rait[1], P.J.McCartney[1], M.A.Coote[1] R.G.Buttery[2], J.Sack[1], J.A.Barbour[2], R.M.Wilkinson[2], D.A.Mackey[12].

University of Melbourne[1], University of Tasmania, Australia[2]

Purpose: To find the genes that cause adult onset primary open angle glaucoma (POAG) we need to accurately phenotype affected family members. We now describe the phenotype in the first family examined in the Glaucoma Inheritance Study in Tasmania.

Method: The family tree of GTas1 was traced using conventional genealogy and all relatives that could be located were contacted. We examined 74 descendants over 40 years of age descended from one couple who married in 1874. The examinations performed included: history, Humphrey visual fields, intraocular pressure, gonioscopy and disc appearance.

Results: 10 members had significant pressure, disc and field changes. 8 members had 2/3 significant pressure, disc and field changes, 6 patients had possible glaucoma with only one significant sign. 7 patients were equivocal, and 43 members were normal or too young to yet show signs of glaucoma.

Conclusion: The family GTas1 shows a consistent subtle phenotype of mildly elevated pressures, initially superior arcuate field defects, normal angles and a characteristic progressive notching of the optic discs. This family has high penetrance autosomal dominant POAG, with a distinct but subtle phenotype.

THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. IV THE PHENOTYPE OF THE GLAUCOMA PEDIGREE GVic1

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University of Melbourne[1], University of Tasmania, Australia.[2]

Purpose: To find the genes that cause adult onset primary open angle glaucoma (POAG) we need to accurately phenotype affected family members. We now describe the phenotype in the third family examined in the Glaucoma Inheritance Study in Tasmania.

Method: The family tree of GVic1 was traced using conventional genealogy and all relatives who could be located were contacted. We examined 28 descendants over 20 years of age descended from one couple who married in 1882. The examination performed included: history, Humphrey visual fields, intraocular pressure, gonioscopy and disc appearance.

Results: 10 members had significant pressure, disc and field changes, 3 members had 2/3 significant pressure, disc and field changes, 2 patients had possible glaucoma with only one significant sign, and 13 members were normal or too young to yet show signs of glaucoma.

Conclusion: The family GVic1 shows a consistent severe phenotype with the earliest age of detection at 30 years, variably elevated pressures, normal angles, and concentric disc cupping with attendant field loss. This family has high penetrance autosomal dominant POAG, with onset in the fourth decade.

THE GLAUCOMA INHERITANCE STUDY IN TASMANIA. IV THE PHENOTYPE OF THE GLAUCOMA PEDIGREE GTas2

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University of Tasmania[1] University of Melbourne, Australia[2].

Purpose. To find the genes that cause adult onset primary open angle glaucoma (POAG) we need to accurately phenotype affected family members. We now describe the phenotype in the second family examined in the Glaucoma Inheritance Study in Tasmania.

Method. The family tree of GTas2 was traced using conventional genealogy and all relatives who could be located were contacted. We examined 101 descendants over 40 years of age descended from one couple who married in 1869. The examination performed included: history, Humphrey visual fields, intraocular pressure, gonioscopy and disc appearance.

Results. 17 members had significant pressure, disc and field changes. 5 members had 2/3 significant pressure, disc and field changes, 9 patients had possible glaucoma with only one significant sign. 50 patients were equivocal or too young to yet show signs of glaucoma, and 17 members were normal. Many members of this family were also on treatment for systemic hypertension.

Conclusion. The family GTas2 shows a variable phenotype of moderately elevated pressures, major field defects, normal angles and a spectrum of localised cup enlargement. This family has incomplete penetrance autosomal dominant POAG, with a variable phenotype.

GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) V: A NEW AUTOSOMAL DOMINANT NEUROPATHY RESEMBLING LOW TENSION GLAUCOMA.

R.M. Wilkinson[1], C.H. Wilkinson[1], J.M. Barbour[1], K.A.S. Sindhu[1], R.L. Cooper[1], 3C.M. Green[1], M.A. Coote[2], J.L. Rait[2], P.J. McCartney[1], D.A. Mackey[1,2].
University of Tasmania[1]; University of Melbourne[2], Australia.

Purpose. To describe the phenotype of the family GTas6 from the Glaucoma Inheritance Study in Tasmania.
Method. The family tree of pedigree GTas6 was traced using conventional genealogical methods. We examined 84 descendants over 40 years of age according to a standardised glaucoma protocol: history, VA, Humphrey visual fields, intraocular pressure, gonioscopy, stereodisc photography and Farnsworth-Munsell 100 hue.
Results. 3 of 84 patients had elevated pressure, disc and field abnormalities, 2 patients had elevated pressure, field abnormalities and borderline disc appearance, 13 patients had disc and field abnormalities and 20 patients had significant visual field defects alone.
Conclusion. The family GTas6 shows an optic neuropathy characterised by an initial superior arcuate scotoma with normal visual acuities progressing to more extensive glaucomatous field loss, mild tritanopic defects, normal or minimally elevated intraocular pressures, and late detection of progressive optic atrophy with cupping.

GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) VI: AUTOSOMAL DOMINANT OPTIC ATROPHY (CHROMOSOME 3q) RESEMBLES LOW TENSION GLAUCOMA IN SOME FAMILY MEMBERS.

D.A. Mackey[1,2], F.B. Halliday[3], A.P. de Graaf[1,2], D.L. Healey[2], E. Rapley[3], R.M. Wilkinson[1], C.H. Wilkinson[1], J.M. Barbour[1], M.A. Coote[2] and P.J. McCartney[1].

University of Tasmania[1]; University of Melbourne[2]; University of New South Wales[3].

Purpose. To clarify the difference between autosomal dominant optic atrophy (ADOA) on chromosome 3q, and primary open angle glaucoma (POAG) or low tension glaucoma (LTG), we examined two ADOA pedigrees according to our standard glaucoma protocol.

Method. Two families, with linkage to the 3q locus for ADOA, were examined according a standardised glaucoma protocol: history, visual acuity, Humphrey 24-2 fields, intraocular pressure, stereodisc photography, and Farnsworth-Munsell 100 hue.

Results. The family from NSW had 42 out of 77 definitely affected individuals, while the family from Tasmania had 7 out of 15 definitely affected individuals. Across both families, 13 had reduced acuity, abnormal colour vision, centrocecal field defects and temporal pallor of the optic discs. 19 had severely affected visual acuity, colour vision and field defects associated with optic atrophy. 17 had moderately reduced vision, abnormal colour vision and arcuate or annular field defects resembling that of glaucoma. Nine of the 56 patients with stereo photographs had cup to disc ratios greater than 0.6. However, the cupping was shallower and not completely typical of glaucoma. Only one patient had intraocular pressure elevation and glaucomatous disc and field abnormalities. He was thought to have POAG.

Conclusion. ADOA appears to be a distinctly separate entity from POAG/LTG. Sometimes family members with ADOA may resemble POAG/LTG.

GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) VII: THE CONFOUNDING PROBLEM OF OVERLAPPING PEDIGREES.

C.H. Wilkinson[1], R.M. Wilkinson[1], J.M. Barbour[1], J. Sack[2], M. Troski[2], M.A. Ring[1], R.L. Cooper[1], J. Lynch[2], J.L. Rait[2], P.J. McCartney[1], M.A. Coote[2], D.A. Mackey[1,2].

University of Tasmania[1]; University of Melbourne[2], Australia.

Purpose. The Glaucoma Inheritance Study in Tasmania (GIST) is a population survey of the island Tasmania (population 500,000). Its aim is to find families with autosomal dominant, adult onset, primary open angle glaucoma (POAG) suitable for genetic linkage analysis. POAG is relatively common, affecting around 3% of the Australian population over 40 years. It is possible that pedigrees may overlap, confusing the true segregation of glaucoma genes. By finding all the large families with POAG and identifying all the descendants in a captive population, it is possible that we may more easily identify overlap of different glaucoma pedigrees.
Method. We studied the pedigree structures of the first 13 families in the GIST for overlapping pedigrees.
Results. Three of the first thirteen families in the study, GTas3, GTas10 and GTas13, which initially looked promising for DNA linkage analysis, were composed of overlapping pedigrees. Thus the glaucoma predisposition could be inherited from multiple directions. In one GIST family, GTas3, there has been intermarriage with other glaucoma pedigrees on five occasions, including two pedigrees previously studied, GTas2 and GTas6.
Conclusion. When finding large families of POAG for DNA linkage analysis, researchers must be aware of the risk of affected individuals inheriting their glaucoma gene from the alternate parent. Thus the alternate parents of affected family members, or their families, must be examined, especially if the phenotype is atypical for the rest of the family.

GLAUCOMA INHERITANCE STUDY IN TASMANIA (GIST) VIII: THE ASSOCIATION OF SYSTEMIC ANTI-HYPERTENSIVE TREATMENT IN GLAUCOMA PEDIGREES.

J.M. Barbour[1], R.M. Wilkinson[1], C.H. Wilkinson[1], D. L. Healey[2], A.P. de Graaf[1,2], M.A. Coote[2], P.J. McCartney[1], M.A. Maclean[2], M.C. Maher[2], C.M. Green[1], D.G. Platts[1], D.A. Mackey[1,2].

University of Tasmania[1]; University of Melbourne[2], Australia.

Purpose. Primary open angle glaucoma (POAG) has been associated with systemic hypertension in certain studies. Whether there are specific sub-groups of glaucoma associated with hypertension is not clear. In Australia 15% of the general adult population, is on treatment for systemic hypertension (on Rx for HT).

Method. We analysed the first 13 families in the Glaucoma Inheritance Study in Tasmania, to see if there were families with increased numbers of patients on Rx for HT. We also looked at the association between glaucoma status and treatment for hypertension.

Results. Overall 36% of all people seen in the GIST over 40 years were on Rx for HT. 3 families had a high number of individuals on Rx for HT (37-52%). In the GTas2 family, 57% (12/21) of those with POAG were on Rx for HT, compared with 37% (35/95) for the family overall ($\chi^2 = 4.8$ $p = 0.03$). In the GTas6 family, 44% (8/18) of those with "POAG" were on Rx for HT, compared with 43% (36/84) overall. In the GTas3 family, 58% (7/12) of those with POAG were on Rx for HT, compared with 52% (24/46) overall.

Conclusion. POAG may be associated with systemic hypertension in certain families. In one family to date, descendants with POAG are much more likely to be on treatment for systemic hypertension.

RETINAL DYSTROPHY IN 18Q- (DE GROUCHY) SYNDROME.

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Purpose: The 18q- de Grouchy syndrome is characterized by growth and mental deficiency, facial dysmorphism, extremity and genitourinary malformations and ocular abnormalities. Four prior cases with retinal dystrophy have been reported suggesting a locus at 18q21.1 for retinal involvement. We use clinical deletion mapping of phenotype-genotype correlations to further refine the locus for retinal dystrophy.
Methods: We report a child with del 18q21.3-qter and typical features of de Grouchy syndrome. Retinal phenotype and electroretinographic changes were consistent with a cone-rod dystrophy.
Conclusion: A review of all reported cases of cytogenetically examined cases of 18q- as well as our own strongly suggests the presence of a critical locus for cone-rod dystrophy at 18q21.3 in contrast to prior reports suggesting 18q21.1.

CLONING OF THE HUMAN *CHX10* GENE AND MUTATION SCREENING OF CANDIDATE DISEASES.

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Purpose: To examine the role of *CHX10* in human disease.
Methods: We mapped the *CHX10* to human chromosome 14q24.3 by in situ hybridisation, and cloned the human gene. SSCP analysis of the 5 exons and their flanking sequences is used to screen the *CHX10* gene of patients with eye phenotypes similar to the microphthalmia, arrested retinal differentiation, and absent optic nerve of or^J mouse.
Results: A polymorphic CA repeat, located in the second intron, was analysed in CEPH recombinant families, indicating the order: centromere D14S71 - *CHX10* - D1S273 telomere. In both the mouse and human genes, the coding region is interrupted by 4 introns located at identical positions. To date, no mutations have been found in *CHX10* in patients with microphthalmia (n=17), anophthalmia (n=11), Leber's congenital amaurosis (n=64), or arRP (n=12). We have identified 3 polymorphisms in *CHX10*.
Conclusion: The high level of conservation of human and mouse *CHX10* reinforces the status of *CHX10* as a strong candidate for defects of human eye development, but a role in Leber's congenital amaurosis appears to have been excluded.

A TASMANIAN PEDIGREE OF AUTOSOMAL DOMINANT RECURRENT CORNEAL EROSION SYNDROME WITH ASSOCIATED MAP-DOT-FINGERPRINT (M-D-F) CORNEAL DYSTROPHY.

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Purpose: Map-dot-fingerprint (M-D-F) corneal dystrophy (Cogan's microcystic dystrophy) is a relatively common clinical finding. It may be associated with recurrent corneal erosion. Although previous studies suggested an autosomal dominant mode of inheritance of M-D-F dystrophy in relatives of index cases who had recurrent corneal erosions, this has been disputed because of the frequency of M-D-F corneal dystrophy in the general population, Werblin and co-workers suggested that the two syndromes (1) M-D-F corneal dystrophy and (2) recurrent corneal erosion syndrome were not related and that M-D-F corneal dystrophy was an age-dependent degenerative condition.
Method: We examined 1 Tasmanian family with recurrent corneal erosion and M-D-F corneal dystrophy.
Results: 10 individuals (4 of 5 generations) of the family had M-D-F corneal dystrophy. The patriarch (born 1874) was nearly blind from unknown causes prior to his death. 4 members from 3 generations have had recurrent corneal erosion syndrome.
Conclusion: This family suggests that there are rare pedigrees of autosomal dominant recurrent corneal erosion syndrome associated with M-D-F corneal dystrophy. Identification of the abnormal protein may be of value for research into laser-induced corneal ulceration healing.

OCULAR MANIFESTATIONS OF JACOBSEN SYNDROME (11Q-).

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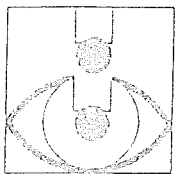
The Hospital for Sick Children, Toronto, Ontario, Canada.

Purpose: To describe the largest series of ocular examinations on affected children with 11q-. Jacobsen syndrome is caused by a terminal deletion of chromosome 11q with a frequent breakpoint at 11q23. This syndrome is characterised by dysmorphic facies, pre and postnatal growth retardation, hematologic disturbances, cardiac and ocular malformations.
Methods: Five consecutive affected children received complete ocular exams and cytogenetic studies.
Results: Observed features in our patients included hypertelorism (4/5), downslanting palpebral fissures (3/5), nasolacrimal system anomalies (2/5), microphthalmia (3/5), nystagmus (2/5) and optic nerve hypoplasia. All required surgery for strabismus or ptosis. At surgery one patient had anomalous extraocular muscles. Two children required nasolacrimal duct surgery, one of which was necessitated by life-threatening dacrocystitis.
Conclusion: Ocular malformations are prevalent in Jacobsen syndrome. An analysis of candidate genes in the breakpoint regions may offer etiologic clues.



Department of Ophthalmology in Tasmania

XIth Symposium of the International Society for Genetic Eye Disease
VIIth Symposium of the Retinoblastoma Society

Hobart, Tasmania, Australia March 10 - 14 1996

SURNAME	TITLE	GIVENNA	COMPANY	STATE
Al Mesfer	Dr	Salaeh	King Khaled Eye Spec Hospital	Saudi Arabia
Antoneli	MD	Celia		BRAZIL
Austin	Dr	Bill		QLD
Barbour	Ms	Julie	Royal Children's Hospital	VIC
Billson	Prof	Frank		NSW
Bird	Prof	Alan		U K
Bond	Dr	Jennifer		TAS
Bronte-Stewart	Ms	Joan		SCOTLAND
Buttery	Dr	Robert		VIC
Carden	Dr	Susan		VIC
Christensen	Dr	Laurie		USA
Clover	Dr	Gillian		N Z
Colville	Dr	Deborah		VIC
Coote	Dr	Michael	13 Crore St	VIC
De Graaf	Miss	A. Pauline		VIC
Dellit	Ms	Lesley		NSW
Desjardins	MD	Laurence		FRANCE
Doz	MD	Francois	Institut Currie	France
Elder	Dr	James		VIC
Erwenne	Dr	Clecia Maria		BRAZIL
Flaherty	Dr	Maree		NSW
Flaxel	Dr	Christina		U K
Fuccillo	Ms	Lucy	Hospital for Sick Children	CANADA
Gallie	Dr	Brenda	The Hospital for Sick Children	CANADA
Giangiacomo	MD	Joseph		USA
Giblin	Dr	Michael		NSW
Glasson	Dr	William		QLD
Green	Dr	Catherine		TAS
Green	Dr	Jane	Medical Genetics Health Sciences	CANADA
Grigg	Dr	John		NSW
Heon	MD	Elise		SWITZERLAND
Hing	Dr	Stephen		NSW
Hope	Miss	Carolyn		N Z
Hungerford	Mr	John	St Bartholomews Hospital	U K
James	Mr	Tony		TAS
Jamieson	Dr	Robyn		NSW
Kaneko	MD	Akihiro		JAPAN
Karcioglu	MD	Zeynel	King Khaled Eye Specialist Hospital	SAUDI ARABIA
Kingston	Dr	Judith		U K
Klintworth	Dr	Gordon		USA
Levin	Dr	Alex		CANADA
Lyons	Ms	Lucienne	Allergan Australia Pty L<td	NSW
Ma	Dr	Colin		USA
Mackey	Dr	David		VIC

Maclean	Asoc Prof	Hector		VIC
Madigan	Dr	Michele	Dept Clinical Ophthalmology	NSW
Madreperla	Dr	Steven		USA
Majima	Prof	Akio		Japan
Malcolm	Dr	Stewart		TAS
Maumenee	Prof	Irene		USA
McCarthy	Ms	Lisa	Hospital for Sick Children	CANADA
Mccartney	Dr	Paul		TAS
Mckay	Dr	David		NSW
McKenzie	Dr	John		VIC
Merin	Prof	Saul	Hasassah University Hospital	ISRAEL
Murphree	Dr	A. Linn		USA
Ohba	MD	Norio		JAPAN
Ohnishi	Mr	Yoshitaka	Wakayama Medical College	JAPAN
Ozeki	Dr	Hironori		JAPAN
Patrick	Dr	Robert		W A
Pearce	Dr	Bill	2-129 Clinic Sicence Bldg	CANADA
Ross	Dr	Carolyn		NSW
Russell-Eggitt	Miss	Isabelle	Great Ormand St Hospital	U K
Seccull	Dr	Honor		QLD
Senft	MD	Susan		HAWAII, USA
Sheffield	Dr	Val	University of Iowa	USA
Staffieri	Mrs	Sandra		VIC
Stevens	Dr	Graham	Radiation Oncology Dept	NSW
Tan	Prof	Karel		NETHERLANDS
Tanaka	Dr	Yasuhiko	Dept Ophthalmol, Keio Univ Hospital	JAPAN
Taylor	Dr	William	St Marks Eye Centre	N Z
Toumoto	Dr	Eiji		JAPAN
Turner	Dr	Anne		NSW
Vaudrey	Ms	Beverley		VIC
Weleber	Prof	Richard	Casey Eye Institute	USA
Westall	Dr	Carol		CANADA
Wilkinson	Ms	Colleen	Royal Children's Hospital	VIC
Wilkinson	Ms	Robin	Royal Children's Hospital	VIC
Wolfs	Md	Roger		Holland
Wong	Ms	Tiffany	Royal Children's Hospital	VIC
Yabe	Dr	Hiroo	2-17-6 Oohashi	JAPAN
Zwaan	Dr	Johan		Saudi Arabia

MONDAY 11th MARCH

PLENARY HALL

8:30 - 9:30 Welcome and Opening Remarks CHAIR DAVID MACKEY

V C Sheffield - *Efficient identification of genetic disease loci*
J Grigg - *Classification of macular dystrophies revisited*
R C Wolfs - *Age related macular degeneration: A genetic-epidemiological approach*

9:30 - 10:00

B L Gallie - *Molecular vs conventional screening for RB1 mutations*
J Sutherland - *Retinoblastoma gene (RB1) mutation id by fragment analysis*

10:00 Morning tea

10:20 - 10:30 Lucienne Lyons - Allergan Sponsorship

10:30 - 11:10

M A Coote - *Glaucoma inheritance study in Tasmania (GIST) IX: Ranking glaucoma for linkage studies*
D A Mackey - *The glaucoma inheritance study in Tasmania 1 - Overview*
R C W Wolfs - *Family aggregation of primary open-angle glaucoma: Presentation of study design and interim analyses*

11:10 - 11:30

P J McCartney - *The glaucoma inheritance study in Tasmania II-IV: The Phenotype of the glaucoma pedigrees GTAS1, GTAS2, GTAS6 and GVIC1.*

11:30 - 12:10

A V Levin - *Attitudes towards predictive testing for retinitis pigmentosa (RP)*
M Flaherty - *Gillespie syndrome*
W G Pearce - *Autosomal dominant iridogoniodysgenesis and axenfeld-rieger syndrome are genetically distinct*

12:10 - 12:40

G K Klintworth - *Linkage of a gene for macular corneal dystrophy to long arm of chromosome 16 (16q22)*
A V Levin - *Ocular manifestations of cornelia de lange syndrome*

12:40 - 1:30 Lunch

1:30 - 2:10 CHAIR WILLIAM GLASSON

N Verma - *Retinoblastoma in Papua New Guinea*
C B G Antoneli - *Retinoblastoma (RB) in Brazil: A distinct subtype of disease*
S Carden - *The Royal Children's Hospital retinoblastoma experience*

2:10 - 3:00

J McKenzie - *The Royal Children's Hospital RB experience: Ocular treatment*
F A Billson - *Retinoblastoma*
A Kaneko - *Bilateral eye preservation of bilateral retinoblastoma*
M Giblin - *Primary methods of management in retinoblastoma: Retinoblastoma International collaborative study. Report 3*

3:00 - 3:30 - Afternoon tea

3:30 - 4:00 - CHAIR JOHN McKENZIE

A L Murphree - *Chemotherapy as primary treatment of intraocular RB*
B L Gallie - *Chemotherapy can replace radiation for intraocular retinoblastoma*

4:00 - 4:30

J E Kingston - *Primary chemotherapy in genetic retinoblastoma*
F Doz - *Efficacy and toxity of neoadjuvant chemotherapy (CT) using etoposide (vp16) and carboplatin in 20 patients (PTS) with intraocular retinblastoma -IORB*

4:30 - 5:00

Z A Karcioglu - *Presentation of retinoblastoma as phthisis bulbi*
L McCarthy - *The retinoblastoma family association*

TUESDAY 12th MARCH

8:00 am	Buses depart from Hobart after picking up from selected hotels	
9:45 am	Tasmanian Devil Park to view Tasmanian's Fauna.	
10:45 am	Depart for Port Arthur	
11:00 am	Port Arthur Historic Site - Morning Tea Frances Langford Tearooms	
11:30 am	GROUP A	GROUP B
	Lecture in Convention Room	Guided Tour of Site
12:30 pm	Lunch - Frances Langford Tearoom	Harbour Cruise 1:00 pm
1:30 pm	Guided Tour of Historic Site	Lunch - FLT
2:30 pm	Harbour Cruise	Lecture Convention Rm
3:30 pm	Afternoon tea served in Frances Langford Tea Rooms	
4:00 pm	Buses depart for the Bush Mill and Tour	
5:00 pm	Remarkable Caves	
6:00 pm	Buffet Dinner and Bush Band at "Cascades," Koonya	
9:00 pm	Buses depart either Return to Hobart or Port Arthur Ghost Tour	

WEDNESDAY 13th MARCH — PLENARY HALL

8:30 - 9:15 CHAIR ROBERT BUTTERY

Alan C Bird - Franceschetti Lecture - *Hereditary retinal dystrophies*

9:15 - 10:00

C Flaxel - *Phenotypic differences between RP2 and RP3: Do they exist?*

D Colville - *Ocular abnormalities in thin basement membrane disease (TBMD)*

C A Westall - *Effect of age in interpreting the electroretinogram*

10:00 - 10:30 Morning Tea

10:30 - 11:00 CHAIR DEB COLVILLE

S Merin - *Spielmeyer vogt disease*

I Russell-Eggitt - *Alstrom syndrome: A review of clinical features*

11:00 - 11:40

R V Jamieson - *Fabry disease - clinical, molecular and counselling correlates*

J Zwaan - *Autosomal recessive inheritance of hallermann-streiff syndrome*

J Zwaan - *A new syndrome with unusual craniofacial anomalies and Y-Suture cataracts*

11:40 - 12:20

E Toumoto - *Clinical evaluation of accompanying ocular and systemic anomalies in charge association*

A V Levin - *Caruncle abnormalities in oculo-auriculo-vertebral spectrum (OAV)*

J Green - *Geographic & genetic mapping of a gene for microphthalmia, cataracts & dwarfism in patients from isolated communities on the south coast of Newfoundland*

12:20 - 1:30 Lunch

1:30 - 2:10 CHAIR MICHAEL GIBLIN

A L Murphree - *The return of photosensitisers and red light as a treatment modality for small primary or recurrent retinoblastomas*

L Desjardins - *New concepts in the management of retinoblastoma*

S A Madreperla - *Treatment of retinoblastoma vitreous base seeding*

2:10 - 2:40

Z A Karcioglu - *Retinoblastoma in twins*

B L Gallie - *Large in-frame deletion in RB1 in a low penetrance family*

2:40 - 3:10 Afternoon Tea

3:10 - 3:40 CHAIR FRANK BILLSON

C Erwenne - *Intraocular retinoblastoma: systemic chemotherapy with carbo+VP16+VCR*

J L Hungerford - *Treatment of adverse histology following enucleation for RB*

3:40 - 4:10

C B G Antoneli - *Unusual second monocular tumor in cured sporadic unilateral unifocal retinoblastoma (RB) patient: Case report*

M C Madigan - *Differentiation and immunoglobulin superfamily antigen modulation by All-Trans retinoic acid on human Y-79 retinoblastoma cell line*

4:10 - 4:40

L MacKeen - *3D ultrasound documentation of retinoblastoma tumor volume*

S B Cha - *Intraocular retinoblastoma: Systemic chemotherapy with carbo+VP16+VCR in pretreated eyes.*

4:40 - 5:30

B L Gallie - *Preference for screening options of retinoblastoma*

A L Murphree - *Role of telemedicine in health care delivery systems of the future*

N Ohba - *Norrie disease in Japan*

THURSDAY MARCH 14 — PLENARY HALL

8:30 - 9:10 CHAIR MAREE FLAHERTY

J Zwaan - *Are all major eye malformations due to mutations in homeobox genes?*

C A Westall - *The electroretinogram in high myopia*

C M Panton - *Measuring and analyzing the full field pediatric electroretinogram*

9:10 - 9:40

L MacKeen - *3D ultrasound evaluation of the optic nerve and choroidal hemangioma in sturge weber syndrome (SWS)*

L DaSilva - *The eye genetics team at the Hospital for Sick Children*

9:40 - 11:40

J Sutherland - *A patient database to manage and follow ocular genetic team patients*

J Sutherland - *The family history pedigree as a valuable diagnostic tool for the ophthalmologist*

10:30 - 11:00 Morning Tea

11: 00 - 11:40 A L Murphree - *Reclassification of intraocular retinoblastoma*

11:40 - 12:30 ISGED and RB 1998 Meeting and Closing Remarks