sessionlistings

DISCLOSURE STATEMENT

Before their talks, all speakers and moderators will disclose the existence of any financial interest and/or other relationship(s) they might have with the manufacturer(s) or providers(s) of any commercial product(s) or services(s) to be discussed during their presentation: honorarium, expenses, grants or research support, employee, consultant role, speakers' bureau member, stock ownership, or any other special relationships. When unlabeled uses are discussed, these will also be indicated.

The American College of Medical Genetics gratefully acknowledges contributions from the following organizations in support of this meeting:

- March of Dimes Birth Defects Foundation (travel awards)
- Section on Genetics and Birth Defects, American Academy of Pediatrics (didactic session on coding and billing)
- Society for Inherited Metabolic Disorders (SIMD workshop)

Wednesday, March 8

1:00 pm–3:00 pm
Grand Ballroom Foyer
Wyndham Hotel

Registration Open

Thursday, March 9

8:00 am–5:00 pm
Grand Ballroom Foyer
Wyndham Hotel

Registration Open

1:00 pm–5:00 pm
Mesquite C
Convention Center

Advanced Counseling Techniques: A Skill Development Clinic
Moderators: *Seymour Kessler, PhD, Berkeley, CA; and Judith L. Benkendorf, MS, Georgetown University Medical Center, Washington, DC*

Continuing education opportunities for clinical genetics professionals have traditionally focused on scientific knowledge and technical information, to the detriment of assisting in the ongoing development of genetic counseling skills. To address this issue, ACMG is sponsoring this practice-based skill development clinic in genetic counseling. Designed for genetics professionals (both physicians and nonphysicians) with at least 5 years of work experience in genetic counseling, the workshop will be "hands-on" and highly interactive, with theory kept to the minimum. Participants are expected to bring short (5- to 10-minute) real-time samples of their counseling on either audiotape or videotape, and be prepared to play them for their colleagues. These samples should exemplify participants' areas of greatest difficulty in counseling clients and families. Relying on the use of role-plays and discussions of how others might deal with particular counseling issues, both faculty and participants will provide suggestions to help hone skills, enhance flexibility, and become more self-aware about areas for further skill development. To provide personal attention and meet individual needs, this workshop is limited to 20 participants, who are expected to commit to staying for the entire session.

♦ ♦ ♦ Upon completion of the session, attendees will have:

1. Increased the flexibility of their genetic counseling skills;
2. Heightened their self-awareness with regard to areas for personal skill development;
3. Gained an appreciation of various models that can be used to undertake ongoing examination of their own genetic counseling.

1:00 pm–5:00 pm
Oasis 2
Convention Center

Coding and Billing
Moderator: *To be announced*

It is with deep regret that we note the recent death of Dr. Charles (Buzzy) Vanchiere, who was to have run this workshop. The ACMG and the Section on Genetics and Birth Defects of the AAP are committed to finding another expert who can offer a session that will meet attendees' needs and honor Dr. Vanchiere's memory.

◆ ◆ ◆ Topics are as follows:

1. The medical encounter in the managed care environment: an overview beginning with the clinical visit and ending with reimbursement we hope!
2. Documentation guidelines we didn't learn in medical school: why, when and how.
3. CPT-4 coding issues that we struggle with: what's old? What's new for 2000? What's needed?
4. Don't let ICD-9-cm coding make you crazy: assigning an acceptable diagnosis when there is not an appropriate diagnosis.
5. What the hell is RBRVS? RBRVS and the relationship to fees, reimbursement, practice expense, and physician compensation.
6. Coding issues versus reimbursement issues: where to point the finger? Compliance, fraud and abuse issues.

◆ ◆ ◆ The educational objectives of this session are as follows:

1. Describe evaluation and management documentation guidelines and be able to use them appropriately.
2. Utilize the appropriate code for pediatric procedures and incorporate the 2000 CPT-4 codes into practice.
3. Recognize the importance of RBRVS and understand its relationship to reimbursement.
4. Demonstrate a working knowledge of the ICD-9-CM and the Pediatric ICD-9-CM.
5. Coding Flip Chart and its usefulness in pediatric care.
6. Recognize the importance of documentation and coding for maximum reimbursement.
7. Understand how to participate in making changes to improve coding and reimbursement for clinical genetics.

7:00 pm–10:00 pm
Catalina Room
Wyndham Hotel

Genetics and Informed Consent: Process and Content at the Millennium
Moderators: *Mary Kay Pelias, PhD, JD, Louisiana State University Health Sciences Center, New Orleans; and Judith L. Benkendorf, MS, Georgetown University Medical Center, Washington, DC*

This workshop will introduce participants to the historical development and current concepts of informed consent, with particular emphasis on the process and content of informed consent in contemporary medical genetics and genetic counseling. Current legislative and regulative principles of informed consent will be reviewed and related to ongoing research efforts and consumer concerns. Participants who enroll in the workshop in advance will receive printed information that anticipates the workshop program, and they will be requested to submit a single question that has arisen in their own experience about the process and/or content of informed consent. Brief formal presentations by selected speakers will be followed by open discussion of questions submitted by workshop participants, with a view to achieving theoretical as well as practical understanding of informed consent. Participants may expect to return to their individual institutions with new ideas and approaches for the assembly and implementation of informed consent protocols.

◆ ◆ ◆ After attending this session, participants will:

1. Appreciate the evolution of the Doctrine of Informed Consent and the current status of federal regulations related to the institutional review process;

Continued

Continued

2. Be familiar with recent and current research in informed consent as it applies to human and medical genetics;
3. Understand the concerns of both colleagues and consumers in defining and solving the dilemmas of consent in both clinical practice and genetics research.

Historical Perspective of Informed Consent in Ethics and the Law
Mary Kay Pelias, PhD, JD
Louisiana State University Health Sciences Center, New Orleans

45 CFR 46: Federal Regulations and Institutional Review Boards
Freda E. Yoder, MA
Office for Protection from Research Risks, National Institutes of Health, Rockville, MD

Scope of Current Research in Genetics and Informed Consent
Jeffrey R. Botkin, MD, MPH
University of Utah, Salt Lake City

The UCLA Experience in Developing Protocols for Informed Consent
Linda McCabe, PhD
University of California, Los Angeles, School of Medicine

Issues of Concern for Consumers and Research Subjects
Rhonda Mahacek
Lake Forest, CA

7:00 pm–8:30 pm
Madera Room
Wyndham Hotel

Biochemical Genetics: From Mechanisms to Diagnosis and Management of Genetic Disease
Moderator: *Antonio Velazquez, MD, PhD, Instituto Nacional de Pediatria, Mexico City, Mexico*

Detailed knowledge of the biochemical and metabolic derangement of inherited diseases, together with their molecular genotypes, are essential for specific diagnoses and rational and effective treatments. The objective of this session is to evidence this assertion by considering some advances in the study of inherited metabolic disorders in the recent past. The first presentation, with emphasis on genotype–phenotype relations, will show how enlightening and powerful can be the joint knowledge of the molecular genotype and of the biochemical disturbances. The second presentation, on the new area of congenital disorders of glycosylation, is a model for the future understanding and management of most genetic diseases. The study of fatty acid oxidation defects has been a burgeoning field in the last two decades. However, many affected patients are still not diagnosed and/or adequately treated. The third presentation, based on these disorders, will demonstrate how a thorough biochemical (and not only molecular!) analysis can empower the diagnostic challenges of many illnesses.

Congenital Disorders of Glycosylation (CDG): Have You Seen Them?
Hudson Freeze, PhD
The Burnham Institute, La Jolla, CA

Challenges and Dilemmas of Metabolic Evaluation: The Fatty Acid Oxidation Defects
Piero Rinaldo, MD, PhD
Laboratory Medicine & Pathology–Mayo Clinic, Rochester, MN

The Impact of Recombinant DNA on Inborn Errors of Metabolism
Stephen D. Cederbaum, MD
University of California, Los Angeles

Friday, March 10

8:00 am–5:00 pm
Grand Ballroom Foyer
Wyndham Hotel

Registration Open

8:30 am–11:45 am
Oasis 1/2
Convention Center

Distinguished Speakers Symposium
Moderator: *R. Rodney Howell, MD, University of Miami School of Medicine, Miami, FL*

This group of distinguished speakers will review several key areas in contemporary genetics.

♦ ♦ ♦ Goals and Objectives:

1. The molecular genetics of the muscular dystrophies demonstrate the spectrum of genetic heterogeneity and how multiple genetic defects lead to muscle dysfunction. Novel approaches to therapy using stem cells will be presented.
2. The critical genetic mechanisms of cancer will be reviewed with specific interest in tumor suppressor genes and oncogenes. Certain genes discussed are mutated in a wide variety of cancers, suggesting a central role in cancer protection. Genetic mechanisms will suggest that cancer prevention in adults, and treatment in children pose important strategies.
3. How we use this new genetic information will be discussed by a leader in medical ethics. Our use could threaten our concepts of health and disease, and our concepts of what is normal.
4. The Presidential Address will discuss the strategic plan for the American College of Medical Genetics as devised by the membership and the Board of Directors.

The Molecular Genetics of Muscular Dystrophy
Louis M. Kunkel, PhD
Howard Hughes Medical Institute, Children's Hospital, Boston, MA

Genetic Mechanisms of Cancer Development
Alfred G. Knudson, Jr., MD, PhD
Fox Chase Cancer Center, Philadelphia, PA

10:00 am–10:30 am

Coffee Break

Beyond the Human Genome Project: Genetics and Ethics, Human Nature and Society
Kevin T. FitzGerald, SJ, PhD, PhD
Loyola University Medical Center, Maywood, IL

Presidential Address
R. Rodney Howell, MD
University of Miami School of Medicine, Miami, FL

11:45 am–1:00 pm
Oasis 3
Convention Center

Exhibits and posters open, lunch sold

1:00 pm–2:30 pm
Mesquite A/B
Convention Center

A1. Overcoming Obstacles to Clinician/Researcher Interaction
Moderator: *Helga V. Toriello, PhD, Spectrum Health, Grand Rapids, MI*

It has become apparent that there is an increasing demand by clinicians for DNA tests to confirm clinical diagnoses or to assist with diagnoses in puzzling cases. However, many DNA tests are only available on a research basis, and thus these research labs are the only recourse to DNA testing. Under federal regulations research labs are not obligated to do testing on or to divulge results of such testing on these samples. Unfortunately, patients will often expect to hear results of DNA testing and are thus frustrated. In addition, there may be potential clinical application of DNA testing, and the failure to receive results frustrates the clinician as well. This session will try to serve as a springboard for initiating dialogue between individuals providing clinical services and those conducting research on gene mapping and identification.

Continued

Continued

♦ ♦ ♦ After attending the session, participants should be able to:
1. If clinician, understand the legal and other constraints research labs are under regarding the release of research results.
2. If researcher, understand that the clinician may have no other recourse to getting a particular test done.
3. Gain an insight into the complexity of issues facing both clinicians and researchers.

Orphan Genetic Disease: Making Testing a Reality
Soma Das, PhD
University of Chicago, IL

One Clinician's View of Clinician/Researcher Interaction
Mark S. Lubinsky, MD
Medical College of Wisconsin, Milwaukee

The Consumer's View of Research
Peggy Mann Rinehart
University of Minnesota, Minneapolis

Bureaucratic Obstacles in Conveying Research Results to Patients
Michael S. Watson, PhD
Washington University School of Medicine, St. Louis, MO

1:00 pm–2:30 pm
Madera Room
Wyndham Hotel

A2. Genetic Factors in Human Infection
Moderator: *Reed E. Pyeritz, MD, PhD, Allegheny University of the Health Sciences, Pittsburgh, PA*

Infections are often viewed as the quintessential examples of environmentally caused diseases. However, as could be predicted from the adage that "all disease is genetic," increasingly a scientific basis is emerging to identify and objectify human variation in susceptibility to infection. The clinical implications of this research are potentially enormous, including understanding pathogenesis and variability of clinical expression and severity of every sort of infection, targeting prevention strategies to the most susceptible people, and optimizing and individualizing therapies. The three presentations in this workshop will provide an overview of this rapidly changing field and emphasize several disorders that have been the focus of recent research.

♦ ♦ ♦ After attending this session, participants should be able to:
1. Understand the factors that predispose people to certain infections.
2. Identify which infections are currently relevant for consideration of host susceptibility testing.
3. Educate their medical colleagues about the promise of understanding the genetic basis of human infection.

Overview
Janet McNicholl, MD
Centers for Disease Control and Prevention, Atlanta, GA

The Genetics of Resistance and Susceptibility to HIV-1 Infection
Richard A. Kaslow, MD, PhD
University of Alabama, Birmingham

Nramp Proteins, Susceptibility to Infection and Divalent Cations Transport
Philippe Gros, MD
McGill University, Montreal, Quebec, Canada

1:00 pm–2:30 pm
Oasis 2
Convention Center

A3. Genetics of Deafness
Moderator: *Nathaniel H. Robin, MD, Case Western Reserve University, Cleveland, OH*

♦ ♦ ♦ After attending this session, participants should be able to:

1. Recognize that hearing loss is an etiologically heterogeneous disorder, with both genetics and non-genetic causes.
2. Learn that genetically determined hearing loss demonstrates incredible diversity, with all forms of inheritance represented, and over 36 genes implicated.
3. Understand how environmental factors interact with genetic determinants in the mitochondrial forms of hearing loss.
4. Learn what testing is available and appropriate for individuals with hearing loss and their relatives, and for carrier screening.
5. Recognize the issues and controversies surrounding the use of genetic testing for newborn screening for hearing loss.

Genetics and Hearing Loss
Richard J. H. Smith, MD
University of Iowa Hospitals and Clinics, Iowa City

Mitochondrial Deafness
Nathan Fischel-Ghodsian, MD
Cedars-Sinai Medical Center, Los Angeles, CA

Newborn Screening for Children with Hearing Loss
William J. Kimberling, PhD
Boys Town National Research Hospital, Omaha, NE

2:30 pm–3:00 pm *Coffee Break*

CONCURRENT PLATFORM SESSIONS

Numbers preceding titles of talks are the numbers of the abstracts as they appear later in this volume.

Biochemical/Molecular Genetics
3:00–4:30 pm
Palm C/D, Convention Center
Moderator: *Nancy E. Braverman, MS, MD, Johns Hopkins Medical Center, Baltimore, MD*

1 3:00–3:15 pm
Potential for clinical misdiagnosis of combined methylmalonic aciduria/homocysteinemia due to absence of acute metabolic derangement. *Gibson KM, Steiner RD, Grompe M, Burlingame T, Senephansiri H, Bottiglieri T, Debley J, Campbell P.*

2 3:15–3:30 pm
Maternal complications and sudden infant death in families with mutations in mitochondrial trifunctional protein. *Ibdah JA, Zhao Y, Viola J, Bennett MJ.*

3 3:30–3:45 pm
Evaluation and management of urea cycle disorders using stable isotope infusions. *Scaglia F, O'Brien W, Rosenberger J, Reeds P, Lee B.*

4 3:45–4:00 pm
Absence of congenital myotonic dystrophy in a baby with 1000 DMPK CTG repeats born after a sibling with CMD. *Carson NL, Whelan DT, Zeesman S.*

5 4:00–4:15 pm
A986S polymorphism of the calcium-sensing receptor *(CASR)* gene is a significant contributor to interindividual variability of serum calcium. *Cole DEC, Vieth R, Trang H, Wong BY-L, Hendy GN, Rubin LA.*

6 4:15–4:30 pm
Connexin 26 deafness in the United States: are we ready for the next millennium? *Pandya A, Oelrich K, Morrell R, Arnos KS, Xia, XJ, Liu X, Albertorio JR, Blanton SH, Friedman T, Nance WE.*

Clinical Genetics
3:00–5:00 pm
Mesquite A/B, Convention Center
Moderator: *John Graham, MD, ScD, UCLA School of Medicine*

7 3:00–3:15 pm
Retrospective review of neurobehavioral and psychosocial issues in adults with putative Sotos syndrome. *Anderson RR, Schaefer GB.*

7A 3:15–3:30 pm
Comparing satisfaction with clinical genetic services to other health services using a standardized survey, the CSQ-8©. *Flannery DB, Kozel ST, Waller JL, Ramage BM, Pullen G.*

8 3:30–3:45 pm
Trends in a clinical genetics program for adults. *Gordon OK, Hixon HEC, Scheuner MT.*

8A 3:45–4:00 pm
Is assortative mating the cause for the high frequency of connexin 26 deafness? *Nance WE, Liu XZ, Pandya A.*

9 4:00–4:15 pm
Abnormal brain structure and function in adult males with isolated clefts of the lip and/or palate. *Nopoulos P, Berg S, Richman L, Canady J.*

10 4:15–4:30 pm
Clinical expression of Gaucher disease correlates with genotype: data from 570 patients. *Scott CR, Pastores G, Andersson H, Charrow J, Kaplan P, Kolodny E, Mistry P, Rosenbloom B, Wappner R, Weinreb N.*

11 4:30–4:45 pm
Focal abdominal wall hernias and preaxial toe polydactyly define distinct phenotypes and etiologies for infants of diabetic mothers and the VATER association. *Shapiro LR, Duncan, PA, Beneck D, Goldin BF, Legarda I, Kronn D.*

12 4:45–5:00 pm
Aortic root dilatation complicates Ehlers-Danlos syndrome. *Wenstrup RJ, Lyle JS, Rose PS, Levy HP, Hoechstetter L, Meyer RA, Francomano CA.*

Cytogenetics/Education and Public Health
3:00–4:30 pm
Catalina Room, Wyndham Hotel
Moderator: *Daynna J. Wolff, PhD, Medical Univ. of South Carolina, Charleston*

13 3:00–3:15 pm
Integrated BAC/PAC resource for identifying chromosomal abnormalities in solid tumors. *Chen X-N, Shi ZY, Shizuya H, Simon MI, Birren BW, Hudson TJ, Korenberg JR.*

14 3:15–3:30 pm
Sensitivity of multiple color spectral karyotyping assessed by small constitutional translocations. *Fan YS, Jung J, Siu V, Xu J.*

15 3:30–3:45 pm
Cyto 2000: a collaborative study for the evaluation of blood chromosome mosaicism. *Schwartz S, Ing PS, VanDyke DL, Vance GH, Reidy JA, Caudill SP, Chen ATL, and Cyto 2000 Working Group.*

16 3:45–4:00 pm
Are we making a difference? Genetics in undergraduate medical education. *Goldberg SA, Short MP.*

17 4:00–4:15 pm
Expanded metabolic screening utilizing tandem mass spectrometry: the Massachusetts experience in the first year. *Marsden DL, Zytkovicz T, Larson C, Shih V, Grady GF.*

18 4:15–4:30 pm
Newborn screening for sickle cell disease: assessing program effectiveness. *Wang SS, Olney R, Harris K, Pass K, Lorey F, Choi R, Kling S, Moore C, Khoury MJ.*

Genetic Counseling/Perinatal Genetics
3:00–4:30 pm
Madera Room, Wyndham Hotel
Moderator: *Karen Filkins, MD, UCLA School of Medicine*

19 3:00–3:15 pm
I don't want to hear you, but I'd like to see you. *Downs CA.*

20 3:15–3:30 pm
Optimal cancer risk assessment program professional roles: analysis of 30 American centers. *Knell ER, Presant CA.*

21 3:30–3:45 pm
Practical theory-based method to improve lay decision-making for genetic testing. *Sorenson JR, Lakon C, Spinney T, Jennings-Grant T.*

22 3:45–4:00 pm
Lack of a cardiac bulge in human growth disorganized embryos: evidence of cardiac malformation leading to pregnancy failure. *Craven C, Bugielski W, Castro C, MacPherson T.*

23 4:00–4:15 pm
Impracticality and inefficiency of first trimester population screening for birth defects. *Cunningham GC, Currier B, Feuchtbaum L.*

24 4:15–4:30 pm
MTHFR mutation and a NOS3 polymorphism influence blood pressure characteristics in preeclampsia. *Riskin-Mashiah S, Pellicena A, Hefler LA, Tempfer CB, Gregg AR.*

5:00 pm–7:00 pm
Oasis 3
Convention Center

See poster presentation listings after March of Dimes Day.

7:00 pm–8:00 pm

Dinner Break

8:00 pm–10:00 pm
Oasis 2
Convention Center

Diagnostic Dilemmas: Unknowns and Rare Knowns
Moderator: *Helga V. Toriello, PhD, Spectrum Health, Grand Rapids, MI*

Saturday, March 11

7:30 am–8:30 am
Oasis 3
Convention Center

Complimentary Continental Breakfast
Exhibits and posters open

8:00 am–5:00 pm
Grand Ballroom Foyer
Wyndham Hotel

Registration Open

8:30 am–11:30 am
Oasis 1/2
Convention Center

Extending the Reach of Genetic Services: Experience with Distance Technology
Moderator: *Alan E. Donnenfeld, MD, Pennsylvania Hospital, Philadelphia*

◆ ◆ ◆ Goals and Objectives:

1. To learn of the varied applications and benefits of utilizing telegenetic technology to communicate genetic information.
2. To become familiar with the experience of Telemedicine Genetic Services at the Medical College of Georgia.
3. To consider the potential benefits and detriments of genetic counseling over videophones.
4. To learn of the potential usefulness of fetal telemedicine in obstetric ultrasonography.
5. To become familiar with the emerging and empowering roles of online mutual help groups in patient care.
6. To develop a strategy for implementing telemedicine in the clinical setting.

Overview of Telegenetics
Becky Butler, LCSW, MSSW
University of Arkansas for Medical Sciences, Little Rock

Experience with Telemedicine Genetic Services at the Medical College of Georgia
David B. Flannery, MD
Medical College of Georgia, Augusta

Genetic Counseling and Videophones
Barbara A. Karczeski, MS
University of Arkansas for Medical Sciences, Little Rock

10:00 am–10:30 am

Coffee Break

The Role of Fetal Telemedicine in Obstetric Ultrasonography
Fergal D. Malone, MD
Columbia University College of Physicians & Surgeons, New York, NY

The Emerging and Empowering Roles of Online Mutual Help Groups in Patient Care
Edward J. Madara, MS
St. Clare's Hospital, Denville, NJ

Implementing Telemedicine and Principles, Practices, and Issues–A Perspective from Georgia
Max E. Stachura, MD
Medical College of Georgia, Augusta

11:30 am–1:00 pm
Oasis 3
Convention Center

Exhibits and posters open, lunch sold

1:00 pm–2:30 pm
Mesquite A/B
Convention Center

B1. The Specialty of Genetics: Communicating Our Value to Medical Colleagues
Moderator: *Bruce R. Korf, MD, PhD, Partners Center for Human Genetics, Harvard Inst., Boston, MA*

ACMG members have indicated in focus groups a need for teaching materials to instruct colleagues in the role of genetic services in patient care. This workshop will provide participants with such teaching materials by: 1) illustrating ways that participants can engage their audiences based on the experience of SPRANS grantees and others who have studied the educational needs of primary care physicians; 2) providing an overview of GeneTests™ (www.genetests.org) and GeneClinics™ (www.geneclinics.org) as teaching tools for primary care physicians; 3) providing participants with a PowerPoint slide presentation in which the roles of genetic testing, genetic evaluation, and genetic counseling unfold through vignettes that can be adapted by the presenter to meet audience needs. Each participant will receive a packet of materials including: 1) ideas on how to engage an audience; 2) a slide with the GeneTests/GeneClinics URLs; 3) a disk with over 75 slides in PowerPoint that can be adapted to each individual's personal use; 4) a printout of the PowerPoint slides; 5) a brochure on how to arrange for CME credits for a talk.

◆ ◆ ◆ After attending this workshop, participants should be able to:
1. Anticipate the educational needs of medical colleagues regarding information on genetic services.
2. Be familiar with the use of GeneTests™ and GeneClinics™ as teaching tools for medical colleagues.
3. Adapt a teaching module of prepared PowerPoint slides to communicate the value of genetic services to medical colleagues.

Identifying the Educational Needs of Primary Care Physicians: What SPRANS Grantees and Others Have Learned
Nancy B. Hanson, MS
Children's Hospital and Regional Medical Center, Seattle, WA

GeneTests™ and GeneClinics™: Genetic Testing Resources That Emphasize the Role of Genetic Services
Bradley W. Popovich, MS, PhD
Oregon Health Sciences University, Portland

"The Primary Care Physician: The Primary Source of Genetic Testing Information"–An Adaptable PowerPoint Teaching Module
Roberta A. Pagon, MD
Children's Hospital and Regional Medical Center and University of Washington, Seattle

1:00 pm–2:30 pm
Catalina Room
Wyndham Hotel

B2. CF 2000
Moderator: *Elaine B. Spector, PhD University of Colorado School of Medicine, Denver*
(Description, goals and objectives will appear in the on-site handout.)

Genotype/Phenotype Correlations
Garry R. Cutting, MD
Johns Hopkins University School of Medicine, Baltimore, MD

CF Population Screening 2000: The End Is Near
David R. Witt, MD
Kaiser Permanente, San Jose, CA

Gene Therapy and Future Directions in the Treatment of Cystic Fibrosis
Wanda K. O'Neal, PhD
University of North Carolina, Chapel Hill

1:00 pm–2:30 pm
Oasis 2
Convention Center

B3. Clinical Issues in Mitochondrial Disorders
Moderator: *Jennifer B. Stroop, MS, Yale University School of Medicine, New Haven, CT*

Mitochondrial conditions provide multiple challenges to physicians and genetic counselors. The complex underlying molecular and biological mechanisms create a clinical population that is hard to define. Mitochondrial diseases can affect multiple organs and systems, and the age of presentation varies from birth to adulthood. Inconsistent patient populations often make it difficult to establish effective therapies. Recurrence risks are hindered by questions of heteroplasmy and familial variation. Speakers will address questions such as: 1) What defines a mitochondrial condition? 2) How do affected individuals present? and 3) How do we educate patients about condition with so much uncertainty? This workshop is designed to provide a practical overview for clinicians and counselors who do not routinely manage patients or perform research in this area.

◆ ◆ ◆ After attending this session, participants should be able to:
1. Recognize some of the biochemical, neuromuscular, and multi-system indications of mitochondrial disorders.
2. Discuss the benefits and limitations of current therapies for mitochondrial disease.
3. Understand the difficulties in counseling patients regarding the uncertainties of progression and prognosis. Appreciate one family's insights into coping with a maternally inherited deletion.

Clinical Presentation and Management in Children with Mitochondrial Disorders
Richard G. Boles, MD
Children's Hospital, Los Angeles, CA

Options and Challenges in the Treatment of Mitochondrial Disease
Robert K. Naviaux, MD, PhD
University of California School of Medicine, San Diego

Precision and Uncertainty in Mitochondrial Genetics: Clinical Approach and a Parent's Perspective
Marthand S. Eswara, MD
Stanford University Medical Center, Stanford, CA

2:30 pm–3:00 pm *Coffee Break*

3:00 pm–4:30 pm
Mesquite A/B
Convention Center

C1. Prenatal Dysmorphology
Moderator: *Lawrence R. Shapiro, MD, New York Medical College, Valhalla*

Skeletal Abnormalities/Short Bones
Deborah Krakow, MD
Cedars-Sinai Medical Center, Los Angeles, CA

Ultrasound
John C. Hobbins, MD
University of Colorado School of Medicine, Denver

Evaluation and Management
Bryan D. Hall, MD
University of Kentucky Medical Center, Lexington

Additional Laboratory Evaluations
Stuart Schwartz, PhD
Case Western Reserve University, Cleveland, OH

3:00 pm–4:30 pm
Catalina Room
Wyndham Hotel

C2. New Advances in Laboratory Diagnostics
Moderators: *Lisa G. Shaffer, PhD, Baylor College of Medicine, Houston, TX; and Bradley W. Popovich, PhD, Oregon Health Sciences University, Portland*

This workshop will review three recent advances in the diagnostic laboratories of biochemical genetics, cytogenetics, and molecular genetics. The first is the development and application of tandem mass spectrometry. This is a device that separates and quantifies ions based on their mass/charge ratios. Many biochemical disorders that are currently being screened using other methods can be diagnosed by tandem mass spectrometry with better sensitivity and specificity. The advantages and disadvantages of tandem mass spectrometry, as well as specific applications to newborn screening, will be presented. Second, the development of telomere-region specific probes for fluorescence *in situ* hybridization (FISH) has greatly enhanced the ability to detect submicroscopic telomeric rearrangements in the cytogenetics laboratory. The methodology, applications, and limitations of this technology will be presented. Third, the molecular diagnosis of many disorders requires the identification of "private" mutations. A current approach is the sequencing of entire genes or portions of genes to identify mutations. The use of sequencing in the molecular diagnostic laboratory poses some unique advantages and disadvantages, as will be presented during this session.

♦ ♦ ♦ After attending this session, participants should be able to:
1. Become familiar with the new approaches to diagnostic testing in the clinical laboratory.
2. Understand the clinical applications for the various new diagnostic techniques.
3. Recognize the advantages and disadvantages of each new approach.

Human Telomere Probes in Clinical Cytogenetics: Probe Characteristics, Methods, Applications and Limitations
David H. Ledbetter, PhD
University of Chicago, IL

Application of Tandem Mass Spectrometry to Newborn Screening
Stephen I. Goodman, MD
University of Colorado Health Sciences Center, Denver

Continued

Continued

Gene Sequencing
Garry R. Cutting, MD
Johns Hopkins University School of Medicine, Baltimore, MD

3:00 pm–4:30 pm
Madera Room
Wyndham Hotel

C3. Genetic Screening: The Future Is in Prevention
Moderator: *Edward R. B. McCabe, MD, PhD, Mattel Children's Hospital at UCLA, Los Angeles, CA*

♦ ♦ ♦ Goal:
To explore how genetic screening currently interfaces with public health activities to foster prevention and the directions that these efforts will take in the future.

♦ ♦ ♦ Objectives will be achieved in the following areas:
1. Newborn Screening
   - Know the current scope of newborn screening tests, and additional tests and diseases under consideration, including tandem mass spectrometry, cystic fibrosis and congenital adrenal hyperplasia
   - Understand the use of DNA confirmatory testing
   - Examine the value of connexin 26 mutation analysis for follow-up of those who fail the newborn hearing screen and have nonsyndromic genetic deafness
2. Applying Public Health Principles to Genetic Testing
   - Understand how genetic variation and environmental factors interact to cause diseases
   - Define how interventions can be designed for individuals with various genetic backgrounds
   - Determine how genetic testing can be guided by consideration of clinical validity and clinical utility
3. Adult Screening for Hemochromatosis
   - Learn what is currently known and unknown about the relationship between genotype and phenotype in hemochromatosis
   - Examine the role of screening in adult populations for hemochromatosis
   - Determine what additional information is required before implementation of hemochromatosis screening

What's New in Newborn Screening?
Edward R. B. McCabe, MD, PhD
Mattel Children's Hospital at UCLA, Los Angeles, CA

Genetics and Public Health in the 21st Century: A Scientific Foundation for Using Genetic Information to Improve Health and Prevent Disease?
Muin J. Khoury, MD, PhD
Centers for Disease Control and Prevention, Atlanta, Georgia

Adult Genetic Screening: Are We Ready for Hemochromatosis?
Linda A. Bradley, PhD
Foundation for Blood Research, Scarborough, ME

4:45 pm–5:15 pm
Oasis 2
Convention Center

5:15 pm–6:15 pm
Oasis 2
Convention Center

6:30 pm–8:30 pm
Poolside
Wyndham Hotel

Sunday, March 12

8:00 am–5:00 pm
Grand Ballroom Foyer
Wyndham Hotel

Registration Open

8:00 am–12:00 pm
Oasis 3
Convention Center

Posters Open (no exhibits)

Oasis 2
Convention Center

There is a rapidly growing interest in the role of mitochondrial dysfunction in degenerative diseases and aging. This interest has been spurred by the discovery and characterization of a wide variety of degenerative disease resulting from mutations in genes involved in mitochondrial synthesis and function. Mitochondrial genes are distributed across the mitochondrial DNA (mtDNA) and the nuclear DNA (nDNA), and mitochondrial disease has recently been associated with mutations in mtDNA genes, in nDNA genes, and in nDNA genes that destabilize the mtDNA. The determination of the molecular bases of mitochondrial diseases has greatly facilitated diagnosis of these disorders, and demonstrated that a primary aspect of the physiology of mitochondrial disease is deficiency in the mitochondrial energy-generating pathway, oxidative phosphorylation (OXPHOS).

Mitochondrial OXPHOS provides much of the energy necessary for life, and generates as a toxic by-product most of the endogenous oxygen radicals or reactive oxygen species (ROS). The mitochondria are also the primary initiators of apoptosis, making the decision to initiate programmed cell death after integrating a variety of signals including the decline in mitochondrial energetics and an increase in mitochondrial oxidative stress. Since mitochondrial energy production and ROS generation are coupled, mitochondrial gene mutations which inhibit energy production can also increase ROS production. When the damage becomes severe, the mitochondria initiate apoptosis and eliminate the affected cell. These insights into the pathophysiology of mitochondrial disease are coming from clinical studies of patients and laboratory studies of animal and cell culture models.

♦ ♦ ♦ After attending this course, the participants will:

1. Have a better understanding of the nature and breadth of clinical symptoms associated with mitochondrial disorders.
2. Develop an appreciation for the genetic complexity of mitochondrial disorders and the resulting challenges of genetic diagnosis and counseling.
3. Have a better sense for when a mitochondrial medicine consultation would be appropriate and some of the national resources that are available for consultation.
4. Learn about some of the approaches that are being explored for the treatment of mitochondrial disease.
5. Acquire an enhanced understanding of the concerns and the options of mitochondrial disease patients and their families.

8:00 am–8:05 am

INTRODUCTION
Michael Katz, MD
March of Dimes Birth Defects Foundation, White Plains, NY

8:05 am–9:05 am

SAMUEL PRUZANSKY MEMORIAL LECTURE
Mitochondrial Diseases in Men and Mice
Douglas C. Wallace, PhD
Emory University School of Medicine, Atlanta, GA

PLENARY SESSION III: DISEASES DUE TO mtDNA MUTATIONS
Moderator: *Michael Katz, MD*

9:05 am–9:35 am — **Overview: Are We Scraping the Bottom of the Barrel?**
Salvatore DiMauro, MD
Columbia Univ. College of Physicians & Surgeons, New York, NY

9:35 am–10:05 am — **Problems in Pathogenesis**
Eric A. Schon, PhD
Columbia Univ. College of Physicians & Surgeons, New York, NY

10:05 am–10:35 am — **Therapeutic Approaches**
Darryl C. De Vivo, MD
Columbia Univ. College of Physicians & Surgeons, New York, NY

10:35 am–10:55 am — *Coffee Break*

PLENARY SESSION IV: DISEASES DUE TO NUCLEAR DNA DEFECTS
Moderator: *Salvatore DiMauro, MD*

10:55 am–11:25 am — **Mitochondrial Protein Importation and Disease**
Grazia Isaya, MD, PhD
Mayo Clinic, Rochester, MN

11:25 am–11:55 am — **Molecular Approaches to Nuclear Defects of the Respiratory Chain**
Eric A. Shoubridge, PhD
McGill Univ., Montreal Neurological Institute, Quebec, Canada

11:55 am–12:25 pm — **Complex I Deficiency: Cellular Consequences**
Carlos T. Moraes, PhD
Univ. of Miami School of Medicine, Miami, FL

12:30 pm–2:30 pm — *Lunch Break*

PLENARY SESSION V: DISEASES DUE TO DEFECTS IN INTERGENOMIC SIGNALING
Moderator: *Douglas C. Wallace, PhD*

2:35 pm–3:05 pm — **A Lesson from MNGIE Syndrome**
Michio Hirano, MD
Columbia Univ. College of Physicians & Surgeons, New York, NY

3:05 pm–3:35 pm — **Autosomal Dominant Progressive External Ophthalmoplegia with Multiple mtDNA Deletions: Nucleus-Induced mtDNA Instability**
Anu Suomalainen, MD, PhD
McGill Univ., Montreal Neurological Institute, Quebec, Canada

3:35 pm–4:05 pm — *Coffee Break*

4:05 pm–4:35 pm — **Mitochondrial DNA Depletion**
David A. Clayton, PhD
Howard Hughes Medical Institute, Chevy Chase, MD

4:35 pm–5:05 pm — **Questions and Answers**
All Speakers