The scientific sessions will be held in the Suffolk Room.

**THURSDAY, OCTOBER 29**

19:00-22:00  Welcome reception (Suffolk Room)

**FRIDAY, OCTOBER 30**

7:30-8:30  Continental Breakfast (Norfolk Room)

8:30-8:40  Opening Remarks

**Session 1: Overview and Clinical Presentation of MHE** (Discussion Leader: Dror Paley)

8:40-9:00  **Dan Wells** (University of Houston)

*Perspectives on the Genetics of Multiple Hereditary Exostosis*

9:00-9:30  **Dror Paley** (Paley Advanced Limb Lengthening Institute)

*Multiple Osteochondromas Treatment of the Lower Limb Deformities*

9:30-10:00  **Scott Kozin** (Shriners Hospital for Children, Philadelphia)

*MHE of the Upper Extremity*

10:00-10:20  Coffee Break

**Session 2: Human Genetics of MHE** (Discussion Leaders: Wim Wuyts and Luca Sangiorgi)

10:20-10:50  **Wim Wuyts** (University of Antwerp)

*Genetics of Multiple Osteochondromas: Overview of the Current Status*

10:50-11:10  **Ivy Jennes** (University of Antwerp)

*Characterisation of the Promoter Region of the Human Exostosin-1 Gene*

11:10-11:40  **Luca Sangiorgi** (Rizzoli Orthopaedic Institute)

*Genotype-Phenotype Correlation Study in 529 MO Patients: 'Protective' and 'Risk' Factors*

11:40-12:00  **Elena Pedrini** (Rizzoli Orthopaedic Institute)

*Osteochondroma Onset and Malignant Degeneration: Redefinition of EXT Gene Role*

12:00-12:10  **Judith Bovée** (Leiden University)

*Osteochondroma Formation: Haploinsufficiency or Two Hits*

12:10-13:30  Lunch (Norfolk Room)
**Session 3:** Biochemistry, Chemistry, and Cell Biology of Heparan Sulfate (Discussion Leader: Marion Kusche-Gullberg)

13:30-14:00  
**Marion Kusche-Gullberg** (University of Bergen)  
*EXT-Dependent Regulation of Heparan Sulfate Structure and Function*

14:00-14:30  
**Robert Linhardt** (Rensselaer Polytechnic Institute)  
*New Advances in Heparan Sulfate/Heparin Analysis and Biosynthesis*

14:30-15:00  
**Jeremy Turnbull** (University of Liverpool)  
*Elucidating the Functions of Heparan Sulfates: Towards Glycomics Strategies*

15:00-15:20  
**Cathy Merry** (University of Manchester)  
*Restoring Function to Heparan-Sulphate Deficient Cells*

15:20-15:40  
**Coffee Break**

**Session 4:** Studies Using Non-Mammalian Model Animals (Discussion Leader: Henry Roehl)

15:40-16:10  
**Henry Roehl** (University of Sheffield)  
*Zebrafish as a Model for Multiple Hereditary Exostoses*

16:10-16:40  
**Rahul Warrior** (University of California, Irvine)  
*Developmental Regulation of Heparan Sulfate Proteoglycan Synthesis*

16:40-17:10  
**Joseph Yost** (University of Utah)  
*HS Fine Structure and FGF Signaling Pathways Converge at Cilia: Does Cilia Function Have a Role in HME?*

17:10-17:30  
**Malgorzata Wiweger** (Leiden University)  
*New Aspects of Multiple Osteochondromas – A Lesson from dackel (dak/ext2) Zebrafish Mutant*

19:30-22:30  
**Dinner (Suffolk Room)**
SATURDAY, OCTOBER 31

8:00-9:00  Continental Breakfast (Norfolk Room)

Session 5: Developmental Biology of Bone and Cartilage (Discussion Leader: Henry Kronenberg)

9:00-9:30  Henry Kronenberg (Massachusetts General Hospital)
           PTH/PTHrP Receptor Signaling is Required for Maintenance of the Growth Plate in Postnatal Life

9:30-10:00 David Ornitz (Washington University School of Medicine)
           FGF Signaling in Skeletal Development and Repair

10:00-10:20 Patrick Allard (Harvard Medical School)
             Understanding the Role of Ihh and Proteoglycans Interaction during Bone Development

10:20-10:40 Coffee Break

10:40-11:10 Michael Underhill (University of British Columbia)
             Regulation of Osteogenesis by the Retinoic Acid Signaling Pathway

11:10-11:40 Olena Jacenko (University of Pennsylvania)
             Altered Matrix at the Chondro-Osseous Junction Leads to Defects in the Hematopoietic Stem Cell Niche

11:40-12:00 Kyle Kurek (Children's Hospital, Boston)
             Metachondromatosis: Expanding the Clinicopathologic Spectrum

11:50-1:30 Lunch (Norfolk Room)

Session 6: Role of Heparan Sulfate in Bone Development / Novel MHE Mouse Models
           (Discussion Leader: Maurizio Pacifici)

13:30-14:00 Maurizio Pacifici (Thomas Jefferson University)
             Mechanisms of Exostosis Formation in Mouse Models of HME

14:00-14:30 Kevin Jones (University of Utah)
             Osteochondromagenesis: Somatic Loss of Heterozygosity Modeled via Cre-Mediated Inversion of the Second Exon of Ext1 in Chondrocytes

14:30-15:00 Andrea Vortkamp (University of Duisburg-Essen)
             Molecular Characterization of Osteochondroma Development in Mice

15:00-15:20 Kazu Matsumoto (Burnham Institute for Medical Research)
             Stochastic Conditional Knockout of Ext1 Reveals an Unexpected Relationship between Biallelic Inactivation of the Gene and the
Development of Multiple Exostoses

15:20-15:40 Coffee Break

Session 7: Role of Heparan Sulfate in Non-Skeletal Tissues (Discussion Leader: Jeffrey Esko)

15:40-16:10 Jeffrey Esko (University of California, San Diego)
Do Mutations in EXT1 or EXT2 Affect Non-Skeletal Tissues?

16:10-16:40 Hudson Freeze (Burnham Institute for Medical Research)
Deficient Heparan Sulfate and N-Glycosylation Contribute to Protein-Losing Enteropathy in Humans and Mice

16:40-17:10 Yu Yamaguchi (Burnham Institute for Medical Research)
Deficiency of Heparan Sulfate in Excitatory Neurons Causes Autism-like Behaviors in Mice

19:30-22:30 Dinner Banquet (Suffolk Room)

SUNDAY, NOVEMBER 1

8:00-8:30 Continental Breakfast (Suffolk Room)

Session 8: Biology of MHE and Related Bone Disorders (Discussion Leader: Benjamin Alman)

8:30-9:00 Benjamin Alman (University of Toronto)
Gli2 and p53 Cooperate to Regulate IGFBP-3-Mediated Chondrocyte Apoptosis in the Progression from Benign to Malignant Cartilage Tumors

9:00-9:30 Pancras Hogendoorn (Leiden University)
Primary Cilia Organization Orchestrating Cell Polarity in the Growth Plate and its Loss in Osteochondroma

9:30-10:00 Frederick Kaplan (University of Pennsylvania)
Osteochondromas & the FOP Metamorphogene

10:00-10:30 Judith Bovée (Leiden University)
On the Clinical Manifestation and the Genetics of Ollier Disease

10:30-11:15 Meeting Summary and General Discussion – Discussion Leaders: Yu Yamaguchi and Maurizio Pacifici
Remarks from the MHE Research Foundation – Sarah Ziegler

11:15 Departure