CURRICULUM VITAE

Dr. Ayman W. El-Hattab, MD, FAAP, FACMG

American Board of Clinical Genetics
American Board of Biochemical Genetics (Metabolic)
American Board of Pediatrics
Fellow of the American Academy of Pediatrics
Fellow of the American College of Medical Genetics

Associate Professor (joint)
College of Medicine, University of Sharjah, Sharjah, United Arab Emirates

Consulting Editor for *GeneReviews*
https://www.ncbi.nlm.nih.gov/books/NBK138604/

Consultant Clinical Genetics and Metabolic

American Hospital Dubai, Dubai, United Arab Emirates
https://www.ahdubai.com/doctors-profile/ayman-el-hattab

Mediclinic City Hospital, Dubai, United Arab Emirates
Mediclinic Welcare Hospital, Dubai, United Arab Emirates
Mediclinic Al Noor Hospital, Abu Dhabi, United Arab Emirates
Mediclinic Al Ain Hospital, Al-Ain, United Arab Emirates
https://www.mediclinic.ae/en/corporate/doctors/1/ayman-el-hattab.html

King's College Hospital London, Dubai, United Arab Emirates
https://kingscollegehospitaldubai.com/dr/ayman-el-hattab/

University Hospital Sharjah, Sharjah, United Arab Emirates
https://www.uhs.ae/doctor-profile/dr-ayman-el-hattab-209/

Kanad Hospital, Al-Ain, United Arab Emirates
https://kanadhospital.org/portfolio/dr-ayman-el-hattab/

KidsHeart Medical Center, Abu Dhabi, United Arab Emirates
KidsHeart Medical Center, Dubai, United Arab Emirates
The Heart Medical Center, Al-Ain, United Arab Emirates
https://www.kidsheart.ae/en/doctors/dr-ayman-el-hattab.html

Neuropedia Children's Neuroscience Center, Dubai, United Arab Emirates
http://neuropedia.ae/about-us/

Hope Abilitation Medical Center, Dubai, United Arab Emirates
https://hope-amc.com/doctor/dr-ayman-el-hattab/

Genesis Perinatal Care Clinic, Dubai, United Arab Emirates
Genesis Healthcare Center, Dubai, United Arab Emirates
https://www.genesis-dubai.com/our_doctors/dr-ayman-el-hattab/

Personal data

Name:	Ayman Warrad Mahmoud El-Hattab
Date of Birth:	1 July 1977
Citizenship:	Jordanian
Family status:	Married with 4 children
Address:	Al Oyoun Village Vila 82 Al-Ain United Arab Emirates
Phone numbers:	Mobile (UAE): 00971-508875123 Mobile (Jordan): 00962-791502467
Email:	elhattabaw@yahoo.com

Education

10/1996 – 06/2002:	Bachelor Degree of Science in Medicine and Surgery, Jordan University of Science and Technology, Irbid, Jordan.
07/2002 – 06/2003:	Internship in medicine, surgery, obstetric, and pediatrics, the Ministry of Health hospitals, Irbid, Jordan.
07/2003 – 06/2005:	Pediatric residency, Jordan University of Science and Technology / King Abdullah University Hospital, Irbid, Jordan.
07/2005 – 06/2008:	Pediatric residency, SUNY Downstate Medical Center, Brooklyn, New York, USA.
07/2008 – 06/2010:	Clinical Genetics Fellowship, Baylor College of Medicine, Houston, Texas, USA.
07/2010 – 06/2011:	Medical Biochemical Genetics Fellowship, Baylor College of Medicine, Houston, Texas, USA.

Examinations

08/2004:	Passed the USMLE Step 1 examination.
10/2004:	Passed the USMLE Step 2 CK examination.
12/2004:	Passed the USMLE Step 2 CS examination.
06/2005:	Passed the USMLE Step 3 examination.
10/2008:	Passed the American Board of Pediatrics examination.
09/2011:	Passed the American Board of Medical Genetics (ABMG) General examination.
09/2011:	Passed the American Board of Medical Genetics (ABMG) Clinical Genetics examination.
09/2011:	Passed the American Board of Medical Genetics (ABMG) Medical Biochemical Genetics examination.

Certificates

06/2002:	Bachelor Degree of Science in Medicine and Surgery, Jordan University of Science and Technology, Irbid, Jordan.
10/2008:	The American Board of Pediatrics, USA.
09/2011:	The American Board of Medical Genetics, Clinical Genetics, USA.
09/2011:	The American Board of Medical Genetics, Medical Biochemical Genetics, USA.

Appointments

07/2011 – 06/2012:	Assistant Professor of Child Health, University of Missouri Health Care, Columbia, Missouri, USA.
07/2011 – 06/2012:	Assistant Professor of Pathology & Anatomical Sciences, University of Missouri Health Care, Columbia, Missouri, USA.
07/2011 – 06/2012:	Director of Biochemical Genetics Laboratory, University of Missouri Health Care, Columbia, Missouri, USA.
07/2012 – 06/2014:	Consultant, Metabolic and Clinical Genetics, Medical Genetics Section, Department of Pediatrics, The Children's Hospital, King Fahad Medical City, Riyadh, Saudi Arabia.
03/2013 – 06/2014:	Assistant Professor of Pediatrics, Faculty of Medicine, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia.
01/2013 – 06/2014:	Program Director, Clinical Genetics and Metabolic Disorders Fellowship, King Fahad Medical City, Riyadh, Saudi Arabia.
06/2014 – 11/2018:	Consultant, Clinical Genetics and Metabolic, Division of Clinical Genetics and Metabolic Disorders, Pediatric Department, Tawam Hospital, Al-Ain, United Arab Emirates.
01/2019 – Present:	Clinical Associate Professor (joint), The Department of Clinical Sciences, College of Medicine, University of Sharjah, Sharjah, United Arab Emirates
01/2019 – Present:	Consultant Clinical Genetics and Metabolic, Genetics Clinics, KidsHeart Medical Center, Abu Dhabi, United Arab Emirates
01/2019 – Present:	Consultant Clinical Genetics and Metabolic, Genetics Clinics, KidsHeart Medical Center, Dubai, and Al-Ain, United Arab Emirates
01/2019 – Present:	Consultant Clinical Genetics and Metabolic, Genetics Clinics, The Heart Medical Center, Al-Ain, United Arab Emirates
04/2019 – Present:	Consultant Clinical Genetics and Metabolic, University Hospital Sharjah, Sharjah, United Arab Emirates
04/2019 – Present:	Consultant Clinical Genetics and Metabolic, Neuropedia Children's Neuroscience Center, Dubai, United Arab Emirates
06/2019 – Present:	Consultant Clinical Genetics and Metabolic, Mediclinic City Hospital, Dubai, United Arab Emirates
07/2019 – Present:	Consultant Clinical Genetics and Metabolic, American Hospital Dubai, Dubai, United Arab Emirates
08/2019 – Present:	Consultant Clinical Genetics and Metabolic, Mediclinic Welcare Hospital, Dubai, United Arab Emirates
08/2019 – Present:	Consultant Clinical Genetics and Metabolic, Hope Abilitation Medical Center, Dubai, United Arab Emirates
08/2019 – Present:	Consultant Clinical Genetics and Metabolic, Mediclinic Al Noor Hospital, Abu Dhabi, United Arab Emirates
08/2019 – Present:	Consultant Clinical Genetics and Metabolic, Oasis Hospital, Al-Ain, United Arab Emirates
09/2019 – Present:	Consultant Clinical Genetics and Metabolic, Genesis Perinatal Care Clinic, Dubai, United Arab Emirates
11/2019 – Present:	Consultant Clinical Genetics and Metabolic, Mediclinic Al Ain Hospital, Al-Ain, United Arab Emirates
04/2019 – Present:	Consultant Clinical Genetics and Metabolic, King's College Hospital London, Dubai, United Arab Emirates

04/2019 – Present: Consultant Clinical Genetics and Metabolic, Genesis Healthcare Center, Dubai, United Arab Emirates

Licenses

07/2003: Licensed by the Ministry of Health, Jordan.
08/2008: Licensed by Texas Medical Board, USA.
08/2010: Licensed by Missouri State Board of Registration for the Healing Arts, USA.
07/2102: Registered at the Saudi Commission for Health Specialties, Saudi Arabia.
05/2014: Licensed by Department of Health - Abu Dhabi, United Arab Emirates.
01/2019: Licensed by Dubai Healthcare City Authority, Dubai, United Arab Emirates.
04/2019: Licensed by Dubai Health Authority, Dubai, United Arab Emirates.
04/2019: Licensed by Ministry of Health, United Arab Emirates.

Membership

Membership in scientific societies

2006 – Present Member of the American Society of Human Genetics (ASHG), USA.
2008 – Present Member of the United Mitochondrial Disease Foundation (UMDF), USA.
2009 – Present Fellow of the American Academy of Pediatrics (AAP), USA.
2012 – Present Fellow of the American College of Medical Genetics (ACMG), USA.
2013 – Present Member of the European Society of Human Genetics (ESHG), Vienna, Austria.
2013 – Present Member of the Society for the Study of Inborn Errors of Metabolism (SSIEM), London, UK.
2013 – Present Member of the Saudi Society of Medical Genetics (SSMG), Saudi Arabia.
2017 – Present Member of the Society for Inherited Metabolic Disorders (SIMD), USA

Membership in committees

09/2011 – 06/2012: Member at The Faculty Leadership and Development Committee, University of Missouri Health Care, Columbia, Missouri, USA.
11/2011 – 06/2012: Member at The Genetic Advisory Committee, Department of Health and Senior Services, Missouri, USA.
11/2011 – 06/2012: Member at The Newborn Screening Standing Committee, Department of Health and Senior Services, Missouri, USA.
07/2012 – 05/2013: The Chairman of the organizing committee for The Basic and Advanced Medical Genetics 6th Annual Review Course, King Fahad Medical City, Riyadh, Saudi Arabia.
09/2012 – 06/2014: Member at The Children's Hospital Undergraduates Committee (planning and organizing teaching pediatrics to medical students), King Fahad Medical City, Riyadh, Saudi Arabia.
11/2012 – 06/2014: Member at The Children's Hospital Research Committee (creation of research culture at Children's Hospital), King Fahad Medical City, Riyadh, Saudi Arabia.
11/2012 – 06/2014: Member at The Children's Hospital Regulatory Documentation Committee (review all internal policies and procedures of Children's Hospital), King Fahad Medical City, Riyadh, Saudi Arabia.
01/2013 – 06/2014: The Children's Hospital representative for the Joint Commission International Accreditation (JCIA) Care of Patient (COP) Chapter, King Fahad Medical City, Riyadh, Saudi Arabia.
02/2013 – 04/2013 The Organizer for The Applications of Advanced Genetic Testing in Medical Diagnosis Symposium, King Fahad Medical City, Riyadh, Saudi Arabia.
05/2013 – 06/2014: Member of the Scientific Committee of the Saudi Society of Medical Genetics, Riyadh, Saudi Arabia.
05/2013 – 04/2014: Member of the Organizing Committee for the First International Meeting for the Saudi Society of Medical Genetics, Riyadh, Saudi Arabia.

06/2013 – 06/2014: Member of the Children's Hospital International Collaboration Task Force, King Fahad Medical City, Riyadh, Saudi Arabia.

02/2014 – 06/2014: Member of the Scientific Committee of the Children's Hospital Annual Research Day, King Fahad Medical City, Riyadh, Saudi Arabia.

06/2015 – 11/2018: Member of Genetics Advisory Panel, Health Authority of Abu Dhabi (HAAD), Abu Dhabi, United Arab Emirates.

10/2017 – 11/2018: Member of Newborn Screening National Committee, Health Authority of Abu Dhabi (HAAD), Abu Dhabi, United Arab Emirates.

Awards

07/1997: Distinguished performance at Jordan University of Science and Technology Medical School. The name appeared on the Faculty Honor List.

06/2002: Rank of seventh among the graduates at Jordan University of Science and Technology Medical School.

03/2008: Received "Certificate of Appreciation" from King's County Hospital Center for outstanding resident, New York, USA.

02/2009: Received the Society for Inherited Metabolic Disorders (SIMD)/Hyperion Fellowship in Inborn Errors of Metabolism Award.

02/2010: Received the Genzyme/ American College of Medical Genetics Foundation (ACMGF) Clinical Genetics Fellowship in Biochemical Genetics Award.

08/2010: Received the Trainee Research Award, the 60th annual meeting of American Society of Human Genetics (ASHG).

11/2010: Received the Research Subject Advocate (RSA) Award from the General Clinical Research Center (GCRC) at Texas Children's Hospital, Texas, USA.

06/2011: Received the Best Abstract Award, first prize, United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine 2011 Meeting.

10/2011: Received the Semifinalist Trainee Research Award, the 12th International Congress of Human Genetics (ICHG) / 61st Annual Meeting of The American Society of Human Genetics (ASHG).

07/2013: Received the Publication Award, Research and Scientific Publication Center, King Fahad Medical City, Riyadh, Saudi Arabia.

09/2013: Received the 2012 Society for Inherited Metabolic Disorders (SIMD) Emmanuel Shapira Award. The award was announced at the 12th International Congress of Inborn Errors of Metabolism (ICIEM 2013). Barcelona, Spain, September 3-6, 2013.

03/2016: Recognized as "Top Poster" at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Tampa, Florida, USA, March 8-12, 2016.

03/2017: Recognized as "Top Poster" at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Phoenix, Arizona, USA, March 21-25, 2017.

09/2017 Received the 2016 Society for Inherited Metabolic Disorders (SIMD) Emmanuel Shapira Award (for the second time). The award was announced at the 13th International Congress of Inborn Errors of Metabolism (ICIEM 2017). Rio de Janeiro, Brazil, September 5-8, 2017.

Publications

Peer-reviewed articles

1. **El-Hattab AW**, Smolarek TA, Walker ME, Schorry EK, Immken LL, Patel G, Abbott MA, Lanpher BC, Ou Z, Kang SH, Patel A, Scaglia F, Lupski JR, Cheung SW, Stankiewicz P. **Redefined genomic architecture in 15q24 directed by patient deletion/duplication breakpoint mapping**. Hum Genet. 2009;126(4):589-602. http://www.ncbi.nlm.nih.gov/pubmed/19557438
2. **El-Hattab AW**, Li FY, Shen J, Powell BR, Bawle EV, Adams DJ, Wahl E, Kobori JA, Graham B, Scaglia F, Wong LJ. **Maternal systemic primary carnitine deficiency uncovered by newborn screening: clinical, biochemical, and molecular aspects**. Genet Med. 2010;12(1):19-24. http://www.ncbi.nlm.nih.gov/pubmed/20027113
3. **El-Hattab AW**, Li FY, Schmitt E, Zhang S, Craigen WJ, Wong LJ. ***MPV17*-associated hepatocerebral mitochondrial DNA depletion syndrome: new patients and novel mutations**. Mol Genet Metab. 2010;99(3):300-308. http://www.ncbi.nlm.nih.gov/pubmed/20074988
4. **El-Hattab AW**, Skorupski JC, Hsieh MH, Breman AM, Patel A, Cheung SW, Craigen WJ. **OEIS complex associated with chromosome 1p36 deletion: a case report and review**. Am J Med Genet A. 2010;152A(2):504-11. http://www.ncbi.nlm.nih.gov/pubmed/20101692
5. Li FY, **El-Hattab AW**, Bawle E, Boles RG, Schmitt E, Scaglia F, Wong LJ. **Molecular spectrum of *SLC22A5* (*OCTN2*) gene mutations detected in 143 subjects evaluated for systemic carnitine deficiency**. Hum Mutat. 2010;31(8):E1632-51. http://www.ncbi.nlm.nih.gov/pubmed/20574985
6. **El-Hattab AW**, Eng PA, Wu JBS, Walker BA, Stankiewicz P, Cheung SW, Brown CW. **Microduplication of Xp11.23p11.3 with effects on cognition, behavior, and craniofacial development**. Clin Genet. 2011;79(6):531-538. http://www.ncbi.nlm.nih.gov/pubmed/20662849
7. **El-Hattab AW**, Zhang F, Maxim R, Christensen KM, Ward JC, Hines-Dowell S, Scaglia F, Lupski JR, Cheung SW. **Deletion and duplication of 15q24: molecular mechanisms and potential modification by additional copy number variants**. Genet Med. 2010:12(9):573-586. http://www.ncbi.nlm.nih.gov/pubmed/20860070
8. Sadikovic B, Wang J, **El-Hattab A**, Landsverk M, Douglas G, Brundage EK, Craigen WJ, Schmitt ES, Wong LJ. **Sequence homology at the breakpoint and clinical phenotype of mitochondrial DNA deletion syndromes**. PLoS One. 2010;5(12):e15687. http://www.ncbi.nlm.nih.gov/pubmed/21187929
9. Fruhman G, **El-Hattab AW**, Belmont JW, Patel A, Cheung SW, Sutton VR. **Suspected trisomy 22: Modification, clarification, or confirmation of the diagnosis by aCGH**. Am J Med Genet A. 2011;155(2):434-438. (http://www.ncbi.nlm.nih.gov/pubmed/21271668
10. **El-Hattab AW**, Fang P, Jin W, Hughes JR, Gibson J, Patel GS, Grange DK, Manwaring L, Patel A, Stankiewicz P, Cheung SW. ***Int22h-1/int22h-2*-mediated Xq28 rearrangements: intellectual disability associated with duplications and *in utero* male lethality with deletions**. J Med Genet. 2011;48(12):840-850. http://www.ncbi.nlm.nih.gov/pubmed/21984752
11. Magoulas PL, **El-Hattab AW**. **Chromosome 15q24 microdeletion syndrome**. Orphanet J Rare Dis. 2012;7(1):2. http://www.ncbi.nlm.nih.gov/pubmed/22216833
12. Magoulas PL, **El-Hattab AW**, Roy A, Bali DS, Finegold MJ, Craigen WJ. **Diffuse reticuloendothelial system involvement in type IV glycogen storage disease with a novel**

***GBE1* mutation: A case report and review**. Hum Pathol. 2012;43(6):943-951. http://www.ncbi.nlm.nih.gov/pubmed/22305237

13. **El-Hattab AW**, Hsu JW, Emrick LT, Wong LJ, Craigen WJ, Jahoor F, Scaglia F. **Restoration of impaired nitric oxide production in MELAS syndrome with citrulline and arginine supplementation**. Mol Genet Metab. 2012;105(4):607-614. http://www.ncbi.nlm.nih.gov/pubmed/22325939
14. **El-Hattab AW**. **Systemic Primary Carnitine Deficiency**. In: Pagon RA, Bird TD, Dolan CR, et al., editors. GeneReviews™ [Internet]. Seattle (WA): University of Washington, Seattle; 1993-. 2012 Mar 15. Available from: http://www.ncbi.nlm.nih.gov/books/NBK84551/. http://www.ncbi.nlm.nih.gov/pubmed/22420015
15. Lee IC*, **El-Hattab AW***, Wang J, Li FY, Weng SW, Craigen WJ, Wong LJ. ***SURF1*-associated Leigh syndrome: A case-series and novel mutations**. Hum Mutat. 2012;33(8):1192-200. (*These two authors contributed equally to this work) http://www.ncbi.nlm.nih.gov/pubmed/22488715
16. **El-Hattab AW**, Scaglia F, Craigen WJ, Wong L-JC . ***MPV17*-Related Hepatocerebral Mitochondrial DNA Depletion Syndrome**. In: Pagon RA, Bird TD, Dolan CR, et al., editors. GeneReviews™ [Internet]. Seattle (WA): University of Washington, Seattle; 1993-. 2012 May 17. http://www.ncbi.nlm.nih.gov/pubmed/22593919
17. **El-Hattab AW**, Emrick LT, Craigen WJ, Scaglia F. **Citrulline and arginine utility in treating nitric oxide deficiency in mitochondrial disorders**. Mol Genet Metab. 2012;107(3):247-252. http://www.ncbi.nlm.nih.gov/pubmed/22819233
18. Magoulas PL, **El-Hattab AW**. **Systemic primary carnitine deficiency: An overview of clinical manifestations, diagnosis, and management**. Orphanet J Rare Dis. 2012;7(1):68. http://www.ncbi.nlm.nih.gov/pubmed/22989098
19. Magoulas PL, **El-Hattab AW**. **Glycogen Storage Disease Type IV**. In: Pagon RA, Bird TD, Dolan CR, et al., editors. GeneReviews™ [Internet]. Seattle (WA): University of Washington, Seattle; 1993-. 2013 Jan 3. Available from: http://www.ncbi.nlm.nih.gov/books/NBK115333/ http://www.ncbi.nlm.nih.gov/pubmed/23285490
20. Segal MM, Williams MS, Gropman AL, Torres AR, Forsyth R, Connolly AM, **El-Hattab AW**, Perlman SJ, Samanta D, Parikh S, Pavlakis SG, Feldman LK, Betensky RA, Gospe SM Jr. **Evidence-Based Decision Support for Neurological Diagnosis Reduces Errors and Unnecessary Workup.** J Child Neurol. 2014;29(4):487-92 http://www.ncbi.nlm.nih.gov/pubmed/23576414
21. **El-Hattab AW**, Scaglia F. **Mitochondrial DNA depletion syndromes: review and updates of genetic basis, manifestations, and therapeutic options**. Neurotherapeutics. 2013;10(2):186-198. http://www.ncbi.nlm.nih.gov/pubmed/23385875
22. **El-Hattab AW,** Emrick L, K. Williamson K, Craigen W Scaglia F. **The effect of citrulline and arginine supplementation on lactic acidemia in MELAS syndrome**. Meta Gene. 2013;1:8-14. http://www.ncbi.nlm.nih.gov/pubmed/25411654
23. Al-Hussaini A, Faqeih E, **El-Hattab AW**, Alfadhel M, Asery A, Alsaleem B, Bakhsh E, Ali A, Alasmari A, Lone K, Nahari A, Eyaid W, Al Balwi M, Craig K, Butterworth A, He L, Taylor RW. **Clinical and molecular characteristics of mitochondrial DNA depletion syndrome associated with neonatal cholestasis and liver failure.** J Pediatr. 2014;164(3):553-559. http://www.ncbi.nlm.nih.gov/pubmed/24321534
24. **El-Hattab AW**, Emrick LT, Chanprasert S, Craigen WJ, Scaglia F. **Mitochondria: role of citrulline and arginine supplementation in MELAS syndrome**. Int J Biochem Cell Biol. 2014;48:85-91. http://www.ncbi.nlm.nih.gov/pubmed/24412347

25. Meilleur KG, Zukosky K, Medne L, Fequiere P, Powell-Hamilton N, Winder TL, Alsaman A, **El-Hattab AW**, Dastgir J, Hu Y, Donkervoort S, Golden JA, Eagle R, Finkel R, Scavina M, Hood IC, Rorke-Adams LB, Bönnemann CG. **Clinical, pathologic, and mutational spectrum of dystroglycanopathy caused by LARGE mutations.** J Neuropathol Exp Neurol. 2014;73(5):425-41.
http://www.ncbi.nlm.nih.gov/pubmed/24709677

26. Segal MM, Abdellateef M, **El-Hattab AW**, Hilbush BS, De La Vega FM, Tromp G, Williams MS, Betensky RA, Gleeson J. **Clinical pertinence metric enables hypothesis-independent genome-phenome analysis for neurologic diagnosis.** J Child Neurol. 2015;30(7):881-888.
http://www.ncbi.nlm.nih.gov/pubmed/25156663

27. **El-Hattab AW**, Emrick LT, Chanprasert S, Hsu JW, Jahoor F, Scaglia F, Craigen WJ. **Glucose metabolism derangements in adults with the MELAS m.3243A>G mutation.** Mitochondrion. 2014;18:63-69.
http://www.ncbi.nlm.nih.gov/pubmed/25086207

28. **El-Hattab AW,** Schaaf CP, Fang P, Roeder E, Kimonis VE, Church JA, Patel A, Cheung SW. **Clinical characterization of int22h1/int22h2-mediated Xq28 duplication/deletion: new cases and literature review.** BMC Med Genet. 2015;16:12.
http://www.ncbi.nlm.nih.gov/pubmed/25927380

29. **El-Hattab AW. Inborn Errors of Metabolism.** Clin Perinatol. 2015;42(2):413-439.
http://www.ncbi.nlm.nih.gov/pubmed/26042912

30. **El-Hattab AW,** Adesina AM, Jones J, Scaglia F**. MELAS syndrome: Clinical manifestations, pathogenesis, and treatment options.** Mol Genet Metab. 2015;116(1-2):4-12.
http://www.ncbi.nlm.nih.gov/pubmed/26095523

31. **El-Hattab AW,** Scaglia F**. Disorders of carnitine biosynthesis and transport.** Mol Genet Metab 2015;116(3):107-112.
http://www.ncbi.nlm.nih.gov/pubmed/26385306

32. Bayram Y, Karaca E, Coban Akdemir Z, Yilmaz EO, Tayfun GA, Aydin H, Torun D, Bozdogan ST, Gezdirici A, Isikay S, Atik MM, Gambin T, Harel T, **El-Hattab AW**, Charng WL, Pehlivan D, Jhangiani SN, Muzny DM, Karaman A, Celik T, Yuregir OO, Yildirim T, Bayhan IA, Boerwinkle E, Gibbs RA, Elcioglu N, Tuysuz B, Lupski JR. **Molecular etiology of arthrogryposis in multiple families of mostly Turkish origin.** J Clin Invest. 2016;126(2):762-78.
http://www.ncbi.nlm.nih.gov/pubmed/26752647

33. **El-Hattab AW**, Saleh MA, Hashem A, Al-Owain M, Asmari AA, Rabei H, Abdelraouf H, Hashem M, Alazami AM, Patel N, Shaheen R, Faqeih EA, Alkuraya FS. **ADAT3-related intellectual disability: Further delineation of the phenotype.** Am J Med Genet A. 2016;170(5):1142-1147.
http://www.ncbi.nlm.nih.gov/pubmed/26842963

34. **El-Hattab AW**, Emrick LT, Hsu JW, Chanprasert S, Almannai M, Craigen WJ, Jahoor F, Scaglia F. **Impaired nitric oxide production in children with MELAS syndrome and the effect of arginine and citrulline supplementation.** Mol Genet Metab. 2016;117(4):407-412.
http://www.ncbi.nlm.nih.gov/pubmed/26851065

35. Harel T, Yesil G, Bayram Y, Coban-Akdemir Z, Charng WL, Karaca E, Al Asmari A, Eldomery MK, Hunter JV, Jhangiani SN, Rosenfeld JA, Pehlivan D, **El-Hattab AW**, Saleh MA, LeDuc CA, Muzny D, Boerwinkle E; Baylor-Hopkins Center for Mendelian Genomics, Gibbs RA, Chung WK, Yang Y, Belmont JW, Lupski JR. **Monoallelic and Biallelic Variants in EMC1 Identified in Individuals with Global Developmental Delay, Hypotonia, Scoliosis, and Cerebellar Atrophy**. Am J Hum Genet. 2016;98(3):562-570.
http://www.ncbi.nlm.nih.gov/pubmed/26942288

36. **El-Hattab AW**, Shaheen R, Hertecant J, Galadari HI, Albaqawi BS, Nabil A, Alkuraya FS. **On the phenotypic spectrum of serine biosynthesis defects**. J Inherit Metab Dis. 2016;39(3):373-381.
https://www.ncbi.nlm.nih.gov/pubmed/26960553

37. **El-Hattab AW**, Schaaf CP, Cheung SW. **Xq28 Duplication Syndrome, Int22h1/Int22h2 Mediated.** 2016 Mar 10. In: Pagon RA, Adam MP, Ardinger HH, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2016. https://www.ncbi.nlm.nih.gov/pubmed/26962617
38. **El-Hattab AW,** Scaglia F. **Mitochondrial cytopathies.** Cell Calcium. 2016;60(3):199-206. https://www.ncbi.nlm.nih.gov/pubmed/26996063
39. **El-Hattab AW. Serine biosynthesis and transport defects.** Mol Genet Metab. 2016;118(3):153-159. https://www.ncbi.nlm.nih.gov/pubmed/27161889
40. **El-Hattab AW,** Scaglia F. **SUCLA2-Related Mitochondrial DNA Depletion Syndrome, Encephalomyopathic Form with Methylmalonic Aciduria.** 2016 Jun 30. In: Pagon RA, Adam MP, Ardinger HH, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2016. http://www.ncbi.nlm.nih.gov/pubmed/20301762
41. Charng WL, Karaca E, Coban Akdemir Z, Gambin T, Atik MM, Gu S, Posey JE, Jhangiani SN, Muzny DM, Doddapaneni H, Hu J, Boerwinkle E, Gibbs RA, Rosenfeld JA, Cui H, Xia F, Manickam K, Yang Y, Faqeih EA, Al Asmari A, Saleh MA, **El-Hattab AW,** Lupski JR. **Exome sequencing in mostly consanguineous Arab families with neurologic disease provides a high potential molecular diagnosis rate.** BMC Med Genomics. 2016;9(1):42. http://www.ncbi.nlm.nih.gov/pubmed/27435318
42. Shaheen R, Al-Salam Z, **El-Hattab AW**, Alkuraya FS. **The syndrome dysmorphic facies, renal agenesis, ambiguous genitalia, microcephaly, polydactyly and lissencephaly (DREAM-PL): Report of two additional patients.** Am J Med Genet A. 2016;170(12):3222-3226. http://www.ncbi.nlm.nih.gov/pubmed/27480277
43. **El-Hattab AW**, Scaglia F. **Mitochondrial Cardiomyopathies**. Front Cardiovasc Med. 2016;3:25. http://www.ncbi.nlm.nih.gov/pubmed/27504452
44. Al Kaabi EH, **El-Hattab AW. N-acetylglutamate synthase deficiency: Novel mutation associated with neonatal presentation and literature review of molecular and phenotypic spectra**. Mol Genet Metab Rep. 2016;8:94-8. http://www.ncbi.nlm.nih.gov/pubmed/27570737
45. Alabdullatif MA, Al Dhaibani MA, Khassawneh MY, **El-Hattab AW. Chromosomal microarray in a highly consanguineous population: diagnostic yield, utility of regions of homozygosity, and novel mutations.** Clin Genet. 2017;91:616-622 https://www.ncbi.nlm.nih.gov/pubmed/27717089
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Book chapters

1. **El-Hattab AW** & Reid VS. **Inborn Errors of Metabolism**. In Cloherty JP, editor. Manual of Neonatal Care. 7th ed. Philadelphia, PA, USA: Lippincott Williams and Wilkins; 2011. p. 767-789.
2. **El-Hattab AW. *MPV17*-associated hepatocerebral mitochondrial DNA depletion syndrome.** In Wong LJ, editor. Mitochondrial Disorders Caused by Nuclear Genes. 1st ed. New York, NY, USA: Springer Science+Business Media LLC; 2013. p. 103-112.
3. **El-Hattab AW** & Scaglia F. **Mitochondrial disorders**. In Lee B, editor. Inborn Errors of Metabolism. 1st ed. Philadelphia, PA, USA: Elsevier Inc; 2014. p. 180-202.
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5. **El-Hattab AW** & Scaglia F. **Disorders of purine and pyrimidine metabolism.** In Kline MW, editor. Rudolph's Pediatrics, 23rd Edition. New York, USA: McGraw-Hill Education; 2018; chapter 163, p759-765.

Abstracts:

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2. **El-Hattab AW,** Li FY, Schmitt E, Zhang S, Craigen W, Wong LJ. **MPV17-associated hepatocerebral mitochondrial DNA depletion syndrome: New patients and novel mutations.** Mitochondrion, 2010;10(2):222.
3. **El-Hattab AW**, Hsu JWC, Jahoor J, Craigen W Scaglia F. **Nitric oxide production in subjects with MELAS syndrome and the effect of arginine and citrulline supplementation: Interim results** (Abstract). Mol Genet Metab. 2011;102(3):252.
4. **El-Hattab AW,** Craigen W, Wong LJ, Jahoor F, Scaglia F. **Nitric oxide production in subjects**

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5. **El-Hattab AW**, Emrick L, Hsu JW, Wong LJ, Jahoor F, Scaglia F, Craigen W. **Glucose kinetics in subjects with MELAS syndrome: interim results** (Abstract). Mol Genet Metab. 2012;105(3):314-315.
6. Peck D, Fang P, **El-Hattab AW**. ***ASS1* novel mutation in an asymptomatic infant with citrullinemia type 1** (Abstract). Mol Genet Metab. 2012;105(3):347.
7. **El-Hattab AW,** Emrick L, Hsu JWC, Jahoor F, Scaglia F, Craigen W. **Glucose kinetics in subjects with MELAS syndrome: Interim results.** Mitochondrion 2012;12(5):554.
8. **El-Hattab AW,** Emrick LT, Williamson KC, Craigen WJ, Scaglia F. **The effect of citrulline and arginine supplementation on lactic acidemia in MELAS syndrome.** Mitochondrion 2013; 13(6): 898.
9. **El-Hattab AW,** Emrick LT, Chanprasert S, Hsu JW, Almannai M, Craigen WJ, Jahoor F, Scaglia F. **Utility of citrulline in treating hypoargininemia in children with MELAS.** Mitochondrion 2015;24: S18-S19

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1. **El-Hattab AW**. **15q24 microdeletion syndrome**. Orphanet Encyclopedia of Rare Diseases. 2012. Available from: http://www.orpha.net/consor/cgi-bin/OC_Exp.php?lng=EN&Expert=94065
2. **El-Hattab AW**. **Mitochondrial DNA depletion syndrome, hepatocerebral form due to DGUOK deficiency**. Orphanet Encyclopedia of Rare Diseases. 2019. Available from: https://www.orpha.net/consor/www/cgi-bin/OC_Exp.php?lng=EN&Expert=279934

Editorial Responsibilities

04/2013 – 06/2014	Editor, KFMC e-Knowledge Exchange Newsletter, King Fahad Medical City, Riyadh, Saudi Arabia
10/2016 – present	GeneReviews, Consulting Editor (https://www.ncbi.nlm.nih.gov/books/NBK138604/)

Reviewer's Activities

Review articles for the following journals:

1. Acute Medicine & Surgery
2. Advances in Clinical Chemistry
3. American Association of Clinical Endocrinologists Journals
4. American Journal of Medical Genetics Part A
5. American Journal of Medical Genetics Part B
6. BMC Medical Genetics
7. BMC Pediatrics
8. BMJ Case Reports
9. Brazilian Journal of Medical and Biological Research
10. Child Neurology Open
11. Clinical Genetics
12. Current Drug Metabolism
13. Developmental Medicine & Child Neurology
14. Early Human Development

15. eNeurologicalSci
16. Epileptic Disorders
17. European Journal of Medical Genetics
18. Expert Opinion on Orphan Drugs
19. Expert Review of Molecular Diagnostics
20. Frontiers in Genetics
21. Future Microbiology
22. Gene
23. GeneReviews
24. Genomics
25. Human Mutation
26. International Invention Journal of Medicine and Medical Sciences
27. Journal of Cardiology and Cardiovascular Sciences
28. Journal of Human Genetics
29. Journal of Inherited Metabolic Disease
30. Journal of Medical Genetics
31. Journal of Nephrology Advances
32. Journal of Pediatric Genetics
33. Journal of Pediatric Neurology
34. Journal of the Neurological Sciences
35. Medical Science Monitor
36. Mitochondrion
37. Molecular Genetics and Metabolism
38. Molecular Genetics and Metabolism Reports
39. Multiple Sclerosis and Related Disorders
40. Neurodegenerative Disease Management
41. Neuropsychiatric Genetics
42. Orphanet Journal of Rare Diseases
43. Pediatric Dermatology
44. PeerJ
45. PLOS ONE
46. Pharmacological Research
47. Scientific Reports
48. Translational Science of Rare Diseases

Teaching activities (details in Appendix 1)

King Abdullah University Hospital (07/2003 – 06/2005)	**4** lectures/presentations
SUNY Downstate Medical Center (07/2005 – 06/2008)	**18** lectures/presentations
Baylor College of Medicine (07/2008 – 06/2011)	**14** lectures/presentations
University of Missouri (07/2011 – 06/2012)	**7** lectures/presentations
King Fahad Medical City (07/2012 – 06/2014)	**26** lectures/presentations
Tawam Hospital (07/2014 – 11/2018)	**36** lectures/presentations
University of Sharjah (01/2019 – Present)	**14** lecture/presentations

Presentation at scientific meetings (details in Appendix 2)

Total presentations 77
Poster presentations 37
Oral presentations 40 (including 32 invited presentations)

The American Society of Human Genetics (ASHG) Annual Meetings: **11** presentations
The American College of Medical Genetics (ACMG) Clinical Genetics Meetings: **11** presentations
The United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meetings: **8** presentations.
The International Congress of Inborn Errors of Metabolism (ICIEM): **5** presentations
The Society for Inherited Metabolic Disorders (SIMD) Annual Meetings: **5** presentations
The European Society of Human Genetics (ESHG) European Human Genetics Conference: **3** presentation
The Society for the Study of Inborn Errors of Metabolism (SSIEM) Annual Symposiums: **3** presentations
The College of American Pathologists (CAP) Pathologists Meeting: **1** presentation
The Child Neurology Society Annual Meeting:**1** presentation
The Basic and Advanced Medical Genetics Annual Review Courses: **2** presentations
The SEHA International Pediatric Conferences: **2** presentations
The Emirates Gynecology Oncology Group (EGOG)/ Emirates Oncology and Obstetric Society meeting: **1**
The OBS-GYNE Exhibit and Congress: **1** presentation
The Emirates Down Syndrome International Conference: **1** presentation
Middle East Metabolic Group (MEMG) meeting: **1** presentation
Arab International Pediatric Medical Congress: **2** presentations
Abu Dhabi International Neonatal Multispecialty Conference: **1** presentation
The International Pediatric Conference of Columbia University Medical Center/ NYP Hospital & KidsHeart: **5**
United Arab Emirates Fetal Medicine Meeting: **1**
Annual Dubai International Pediatric Neurology Congress: **1**
Emirati Pediatric Neurology Network Meeting: **2**
World Pediatric Cardiology and Cardiovascular Surgery Congress: **1**
Emirates Orthopedics Society meeting: **1**
Emirates Pediatric and Neonatal Intensive Care Conference (EPNIC): **1**
Annual International Pediatric Medical Congress: **1**
Gulf Rare Disease Academy: **1**
NEUROPEDICON: **1**
Neurosciences Update, Cleveland Clinic Abu Dhabi: **1**
Pediatric & Neonatal International Conference of University Hospital Sharjah (UHS): **1**

Workshop and courses

1. Writing a Research Proposal Workshop for health care providers. King Fahad Medical City, Riyadh, Saudi Arabia, September 9, 2012.
2. Lysosomal Storage Diseases (LSD) Masterclass. Dubai, United Arab Emirates, September 27 – 28, 2012.
3. The Applications of Advanced Genetic Testing in Medical Diagnosis Symposium, King Fahad Medical City, Riyadh, Saudi Arabia, April 7, 2013.
4. The 25th Riyadh Autism Journal Club (Genetic Evaluation for Autism and A Neuronal Carnitine Deficiency Hypothesis for Prevention of Non-Dysmorphic Autism), Prince Nasser Bin Abdulaziz Center for Autism, Saudi Arabia, April 7, 2013.
5. The Basic and Advanced Medical Genetics 6th Annual Review Course. King Fahad Medical City, Riyadh, Saudi Arabia, May 21-22, 2013.
6. King Abdullah International Medical Research Center (KAIMRC) 4th Annual Scientific Forum-Research Day, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia, November 12-13, 2013.
7. The 10th Middle East Metabolic Group (MEMG) meeting, Istanbul, Turkey, December 5-7, 2013.
8. The First International Meeting for the Saudi Society of Medical Genetics, Riyadh, Saudi Arabia,

April 30th-May 1st, 2014. Moderator for the Mitochondrial Disorders Session.

9. The Basic and Advanced Medical Genetics 7th Annual Review Course. King Fahad Medical City, Riyadh, Saudi Arabia, May 21, 2014. Moderator for the Basics in Cytogenetics and Molecular Genetics Session.
10. How to publish your medical research in international scientific journals workshop. Tawam Hospital, Al-Ain, United Arab Emirate, October 14, 2014.
11. The 2nd rare disease Middle East leaders' forum. Dubai, United Arab Emirates, December 6, 2014.
12. KidsHeart Medical Center Lecture series, Abu Dhabi, United Arab Emirates, 7 January 2019
13. KidsHeart Medical Center Lecture series, Abu Dhabi, United Arab Emirates, 4 February 2019
14. The Pediatric Neuroscience Series, the fourth Chapter, Dubai, United Arab Emirates, 28 March 2019.
15. The 2nd MPS I masterclass, Dubai, United Arab Emirates, 26-27 April 2019

Research support

Title: The diagnostic yield of chromosomal microarray in pediatrics
Goals: Chromosomal microarray is a common test that has been utilized frequently to test for chromosomal abnormalities in children with developmental delay, congenital malformation, and growth failure. In this study, we aim to review children who received this test to determine the indications and the outcome of this test. Determining the fraction of cases that are diagnosed through chromosomal microarray can help in determining the role of this test in investigating children with developmental delay, congenital malformation, and growth failure.
Principle Investigator: Ayman W El-Hattab, MD.
Period: 1/2015 – 12/2019.
Role: Principle investigator

Title: The utility of whole exome sequencing (WES) in diagnosing neurogenetic diseases
Goals: Whole exome sequencing (WES) has been increasing used to diagnose genetic and neurological diseases. The test involves the sequencing of the coding region of all known genes and is utilized when the clinical picture is not consistent with a specific disease. This test have been used and helped in diagnosing several rare genetic, metabolic, and neurological diseases. This study aims to review the outcome of WES in diagnosing neurogenetic diseases and the clinical features of diseases diagnosed by WES through a retrospective chart review.
Principle Investigator: Ayman W El-Hattab, MD.
Period: 1/2017 – 12/2019.
Role: Principle investigator

Title: The effect of arginine and citrulline supplementation on endothelial dysfunction in mitochondrial diseases.
Goals: We hypothesize in this study that patients with mitochondrial diseases have endothelial dysfunction that will improve after arginine or citrulline supplementation. We will assess endothelial function using peripheral arterial tonometry before and after arginine supplementation, and before and after citrulline supplementation in children with mitochondrial diseases. We expect to have improvement in endothelial function after arginine and citrulline supplementation. This would add more evidence to the beneficial therapeutic effect of arginine and citrulline and more support to their use in patients with mitochondrial diseases.
Principle Investigator: Ayman W El-Hattab, MD.
Period: 12/2014 – 12/2018.
Annual direct cost: 175,000 AED ($47,650).
Funding source: National Research Foundation, Ministry of Higher Education and Scientific

Research, United Arab Emirate.
Role: Principle investigator

Title: Whole exome sequencing to identify causes of Mendelian genetic diseases.
Goals: Performing whole exome sequencing on patients suspected to have Mendelian genetic diseases but have no molecular diagnosis aiming to 1) identify the genetic diagnosis in those patients which can help in treatment, prognosis, recurrent risk anticipation, and prevention via prenatal testing, 2) expand the knowledge about the phenotype associated with mutations in known gene, and 3) discover new genes in which mutations can be associated with Mendelian genetic diseases.
Principle Investigator: Ayman W El-Hattab, MD.
Period: 04/2013 – 12/2016.
Role: Principle investigator

Title: Arginine flux and nitric oxide production in subjects with MELAS syndrome and the effect of arginine and citrulline supplementation
Goals: To test whether nitric oxide production is lower in subjects with MELAS syndrome, whether arginine and citrulline supplementation will increase the nitric oxide production, and whether citrulline supplementation will increase nitric oxide production more than arginine supplementation.
Principle Investigator: Fernando Scaglia, MD.
Period: 7/2009-6/2011.
Annual direct cost: $50,000 per year for 2 years.
Funding source: SIMD/Hyperion Fellowship in Inborn Errors of Metabolism.
Role: Recipient of the SIMD/Hyperion Fellowship in Inborn Errors of Metabolism for 2009.

Title: Glucose kinetics in subjects with MELAS syndrome
Goals: To assess glucose metabolism in individuals with MELAS syndrome who do or do not have diabetes mellitus (DM) and in healthy control individuals to investigate the pathophysiologic etiology of DM in MELAS syndrome and determine whether individuals with MELAS syndromes who do not yet have DM have incipient alterations in glucose metabolism.
Principle Investigator: William Craigen, MD, PhD.
Period: 7/2010-6/2011.
Annual direct cost: $75,000 per year for 1 year.
Funding source: Genzyme/ACMGF Clinical Genetics Fellowship in Biochemical Genetics
Role: Recipient of the Genzyme/ACMGF Clinical Genetics Fellowship in Biochemical Genetics for 2010

Title: Long-term extension of a phase 2, open-label dose-finding study to evaluate the safety, efficacy, and tolerability of multiple subcutaneous doses of rAvPAL-PEG in subjects with PKU.
Goals: To evaluate the effect of long-term administration of multiple doses of SC injections of rAvPAL-PEG on blood phenylalanine concentrations in subjects with PKU.
Principle Investigator: Richard Hillman, MD, PhD.
Period: 07/2011 - 06/2012.
Annual direct cost: $250,000 annually.
Funding source: BioMarin Pharmaceutical, Inc.
Role: Co-investigator (5% effort).

Title: PKUDOS – Phenylketonuria (PKU) Demographics, Outcomes, and Safety Registry.
Goals: Observational registry for patients with PKU receiving Kuvan. The purpose of this registry is to increase knowledge about the course of disease in Kuvan treated patients by evaluating changes in dietary phenylalanine prescriptions, blood phenylalanine levels, concomitant medications, neurocognitive, and behavioral status over time. Additionally, PKUDOS will collect additional data on the long-term safety and efficacy of Kuvan.

Principle Investigator: Richard Hillman, MD, PhD.
Period: 07/2011 – 06/2012.
Funding source: BioMarin Pharmaceutical, Inc.
Role: Co-investigator.

Title: Lysosomal storage disease (LSD) registry program.
Goals: This registry is a multi-center, observational program for patients diagnosed with a LSD including Gaucher, Fabry, MPS I, and Pompe disease. The objectives of the LSD Registry Program are: a) to enhance the understanding of the variability, progression, and natural history of these LSD diseases with the ultimate goal of better guiding and assessing therapeutic intervention, b) to provide the medical community treating patients with LSD diseases with recommendations for monitoring patients and reports on patient outcomes to optimize patient care, and c) to evaluate the long-term effectiveness of enzyme replacement therapy.
Principle Investigator: Thomas W Loew, MD.
Period: 07/2011 – 06/2012.
Funding source: Genzyme Corporation.
Role: Co-investigator.

Title: Inborn Errors of Metabolism Information System (IBEM-IS).
Goals: This is a long term outcome registry for patients with inborn errors of metabolism who are cared for in the seven state Region 4, and eight state Heartland area delineated by HRSA. (http://region4genetics.org/region4/ibem_is_registry.aspx). This cohort of states encompasses >1 million births per year, all of whom are screened using expanded newborn screening. This represents an opportunity to accumulate meaningful sample sizes for mining of data intrinsic to the database, as well as for recruitment for future interventional studies. It is anticipated that the IBEM-IS will result in the development of evidence-based treatment protocols, potentially improving the care, health and quality of life for children diagnosed with these rare conditions. The registry will also serve as an infrastructure for eventual access to intervention trials.
Principle Investigator: Richard Hillman, MD, PhD.
Period: 07/2011 – 06/2012.
Funding source: Heartland Regional Genetics Collaborative.
Role: Co-investigator.

Title: A phase 4, open-label, prospective study in patients with Pompe disease to evaluate the efficacy and safety of alglucosidase alfa produced at the 4000 L scale.
Goals: To evaluate the efficacy and safety of alglucosidase alfa produced at the 4000 L scale (Lumizyme®) in patients with Pompe disease 1-8 years old.
Principle Investigator: Ayman W El-Hattab, MD.
Period: 03/2012 – 06/2012.
Annual direct cost: $80,000 annually.
Funding source: Genzyme Corporation.
Role: Principle investigator (6% effort).

Referees

1. **Fernando Scaglia, M.D.**
   Professor, Department of Molecular and Human Genetics
   Baylor College of Medicine
   One Baylor Plaza, MS BCM225
   Houston, TX, 77030, U.S.A.
   Phone: +1-832-822-4280
   Fax: +1-832-825-4294
   E-mail: fscaglia@bcm.edu

2. **William J. Craigen, M.D., Ph.D.**
   Professor, Department of Molecular and Human Genetics
   Baylor College of Medicine
   One Baylor Plaza, MS BCM225
   Houston, TX, 77030, U.S.A.
   Phone: +1-713-798-8305
   Fax: +1-713-798-7773
   E-mail: wcraigen@bcm.edu

3. **V. Reid Sutton, M.D.**
   Director, ABMG Training Programs
   Baylor College of Medicine
   Texas Children's Hospital
   6701 Fannin St. Suite 1560.10
   Houston, Texas 77030, U.S.A.
   Phone: 832-822-4292
   Fax: 832-825-4294
   E-mail: vrsutton@texaschildrens.org

4. **Dr. Ali Al Asmari**
   Head, Medical Genetic Section
   Metabolic Consultant, Children's Hospital
   Assistant Professor
   Faculty of Medicine, King Saud bin Abdulaziz University for Health Sciences
   King Fahad Medical City, Riyadh, Saudi Arabia
   P.O. Box 59046 Riyadh 11525
   Phone: +966 1 288 9999 ext.2650
   E-mail: aalasmari@kfmc.med.sa

5. **Fowzan S Alkuraya, MD (Hons) ABP ABMG (Clinical Genetics and Clinical Molecular Genetics)**
   Professor of Human Genetics
   Principal Clinical Scientist and Senior Consultant
   Head, Developmental Genetics Unit
   King Faisal Specialist Hospital and Research Center
   MBC-03 PO BOX 3354
   Riyadh 11211, Saudi Arabia
   Tel: +966 11 442 7875
   Fax: +966 11 442 4585
   falkuraya@kfshrc.edu.sa
   alkuraya@outlook.com

6. **Mohamed Sulaiman, MD, FAAP, FACC**
Consultant Pediatric Cardiologist & Co-Director
KidsHeart Medical Center, Abu Dhabi-Dubai-Al Ain
Assistant Professor of Pediatrics
Columbia University College of Physicians & Surgeons, New York, USA
Mob.: (+971) 555451467
Business email: msulaiman@kidsheart.ae

7. **Mohamed Hamdan, MD, FAAP, FACC**
Consultant Pediatric Cardiologist & Co-Director
KidsHeart Medical Center, Abu Dhabi-Dubai-Al Ain
Assistant Professor of Pediatrics
Columbia University College of Physicians & Surgeons, New York, USA
Mob.: (+971) 50 448 7454
Business email: mhamdan@kidsheart.ae

Appendix 1: Teaching activities

King Abdullah University Hospital (07/2003 – 06/2005)

Department of Pediatrics Case Conference:

1	09/2003:	Maple syrup urine disease
2	11/2003:	Erythema nodosum
3	01/2005:	Neonatal thrombosis

Department of Pediatrics Journal Club:

4	05/2004:	Fluid resuscitation

SUNY Downstate Medical Center (07/2005 – 06/2008)

Department of Pediatrics Case Conference:

1	11/2005:	Congenital syphilis
2	01/2006:	Dermatomyositis
3	02/2006:	Clinical evaluation of substance abuse
4	04/2006:	Infant of diabetic mother
5	05/2006:	Complex chromosomal abnormality in a newborn with multiple congenital defects
6	05/2006:	Cornelia de Lange syndrome
7	08/2006:	Ambiguous genitalia
8	09/2006:	Teratology
9	01/2007:	Imprinting: Angelman syndrome and Prader-Willi syndrome
10	03/2007:	Herpes Simplex Virus
11	03/2007:	Depression
12	04/2007:	Fanconi anemia
13	05/2007:	Alport syndrome
14	10/2007:	Cerebral palsy
15	01/2008:	Amaurosis fugax
16	01/2008:	Systemic lupus erythematosus
17	04/2008:	Maternal hyperthyroidism
18	06/2008:	Fetal alcohol syndrome

Baylor College of Medicine (07/2008 – 06/2011)

Human and Molecular Genetics Department Grand Rounds

1	08/2008:	Chromosome 15q24 deletion
2	10/2008:	OEIS complex and 1p36 deletion
3	12/2008:	Glycogen storage disease type IV
4	01/2009:	Congenital disorders of glycosylation
5	03/2009:	Systemic primary carnitine deficiency
6	05/2009:	Norrie disease: case presentation
7	08/2009:	Juvenile Huntington disease
8	10/2009:	Gorlin syndrome
9	01/2010:	Epidermolysis Bullosa
10	02/2010:	Complex IV deficiency

Human and Molecular Genetics Department Clinical Conferences (CME)

11	10/2009:	MELAS syndrome: Pathogenesis and potential therapies
12	11/2010:	MELAS syndrome: Overview and ongoing research

Medical students teaching

13	09/2009:	Facilitate medical student groups in discussing the medical and social aspects of genetic disorders
14	12/2010:	Facilitate medical student groups in discussing the ethical aspects in genetic cases

University of Missouri (07/2011 – 06/2012)

Child Health Department Grand Rounds (CME)

1	09/2011:	Mitochondrial disorders: mechanisms, manifestations, and diagnostic approach

First year medical students:

2	09/2011:	Problem based learning tutorial: OTC female carrier

Second year medical students:

3	04/2012:	Problem based learning tutorial: Metabolic disorders

Third year medical students

4	11/2011-06/2012:	Metabolic disorders and newborn screening. A lecture during the 3rd year medical student clerkship rotation in the Department of Child Health (once every 8 weeks).
5	11/2011-06/2012:	Mitochondrial diseases. A lecture during the 3rd year medical student clerkship rotation in the Department of Child Health (once every 8 weeks).
	Pediatric residents	
6	09/2011:	Lecture: How to write a manuscript
7	05/2012:	Lecture: Metabolic disorders
King Fahad Medical City (07/2012 – 06/2014)		
	Pediatric Department Grand Rounds:	
1	11 Sep 2012	Lecture: Congenital disorders of glycosylation
2	15 Apr 2014	Lecture: Mitochondrial diseases: mechanisms and clinical manifestations
	Pediatric residents teaching:	
3	15 May 2013	Participation as an examiner at the Junior End Year Clinical Exam
4	05 May 2014	Participation as an examiner at the Junior End Year Clinical Exam
5	18 May 2012	Tutorial: Review of common metabolic disorder
	Third year medical students:	
6	03 Nov 2012	Lecture: Strategies for prevention and treatment of genetic disorders
7	24 Feb 2013	Lecture: Cystic fibrosis as a genetic disorder
8	25 Sep 2013	Lecture: Genetic information, its expression and variation
9	26 Sep 2013	Lecture: Chromosome and cell genetics
10	26 Sep 2013	Lecture: Principles of molecular genetics
11	10 Nov 2013	Lecture: Prevention and treatment of genetic disorders
12	24 Feb 2014	Lecture: Cystic fibrosis as a genetic disorder
	Fifth year medical students:	
13	03 Sep 2012	Lecture: Inborn errors of metabolism
14	21 Nov 2012	Participation in OSCE examination as an examiner
15	06 March 2013	Participation in OSCE examination as an organizer and examiner
16	03 April 2013	Lecture: Inborn errors of metabolism
17	21 Nov 2013	Lecture: Dysmorphology and Chromosomal Disorder
18	30 Jan 2014	Participation in OSCE examination as an organizer and examiner
19	11 Jun 2014	Lecture: Dysmorphology and Chromosomal Disorder
	Clinical Genetics fellows	
20	19 March 2014	Lecture: Malformation terminology
21	23 April 2014	Lecture: Prevention and treatment of genetic diseases
	Other teaching activities	
22	15 Sep 2012	Lecture: Fabry disease for Nephrology Department
23	16 Dec 2012	Examiner at the 4th Clinical Course in Pediatrics, Department of Pediatrics, King Khalid University Hospital; College of Medicine, King Saud University, Riyadh, Saudi Arabia.
24	06 Nov 2013	Lecture: Hunter syndrome. Security Forces Hospital, Riyadh, Saudi Arabia.
25	18 Nov 2013	Examiner at the 5th Clinical Course in Pediatrics, Department of Pediatrics, King Khalid University Hospital; College of Medicine, King Saud University, Riyadh, Saudi Arabia.
26	05 Feb 2014	Lecture: Genetic counseling for nursing students
Tawam Hospital (07/2014 – 11/2018)		
	Genetics and Metabolic Grand Round	
1	28 Sep 2014	Dysmorphology and malformation terminology
2	26 Oct 2014	Introduction to metabolic disorders
3	02 Nov 2014	Treatment options of inborn errors of metabolism
4	07 Dec 2014	Cardiomyopathy: genetic and metabolic evaluation
5	21 Dec 2014	Prevention of genetic diseases
6	28 Dec 2014	Genomic disorders
7	25 Jan 2015	Principles of molecular genetics
8	05 Apr 2015	Glycogen storage diseases
9	19 Apr 2015	Overgrowth syndrome
	Pediatrics Department Grand Round	

10	24 Dec 2014	Carnitine deficiency
11	25 Jan 2016	How can we define “inborn errors of metabolism”?
12	03 Oct 2016	Storage diseases.
13	13 Dec 2017	Glycogen storage diseases
	Pediatric Resident Lectures	
14	19 Apr 2015	Introduction to clinical genetics and patterns of inheritance
15	20 Apr 2015	Dysmorphology and malformation terminology
16	21 Apr 2015	Principles of molecular genetics
17	22 Apr 2015	Cytogenetics and chromosomal abnormalities
18	26 Apr 2015	Introduction to inborn errors of metabolism
19	28 Apr 2015	Organic acidemias and approach for metabolic acidosis
20	30 Apr 2015	Urea cycle defects and approach for hyperammonemia
21	03 May 2015	Hypoglycemia due to inborn errors of metabolism
22	04 May 2015	Lysosomal and peroxisomal storage diseases
23	05 May 2015	Mitochondrial disorders
24	06 May 2015	Treatment and prevention of genetic diseases
25	31 July 2016	Hypoglycemia: case scenarios, approach, and common metabolic disorders
26	03 Aug 2016	Hyperammonemia: case scenarios, approach, and common metabolic disorders
27	07 Aug 2016	Metabolic acidosis: case scenarios, approach, and common metabolic disorders
28	09 Aug 2016	Dysmorphology and malformation terminology
29	15 Mar 2018	Mitochondrial diseases
30	29 Mar 2018	Genomic disorders
	Other teaching activities	
31	16-17 Sep 2014	Participated as an examiner in the assessment of the IVF clinical scientists, Health Authority-Abu Dhabi (HAAD).
32	17 Sep 2014	Al Ain Pediatric Club, lecture: Genomic disorders.
33	22 Dec 2014	Breast Cancer Master Class at Tawam Hospital, Lecture: *BRCA1* and *BRCA2*-related hereditary breast and ovarian cancer.
34	11 June 2015	Oasis Hospital, Al-Ain, lecture: Storage diseases.
35	17 Dec 2015	King Abdulla Specialized Children’s Hospital, Riyadh, Saudi Arabia. Lecture: How can we define “inborn errors of metabolism”?
36	31 Oct 2016	Jordan University, Amman, Jordan. Lecture: Mitochondrial diseases: mechanisms, manifestations, diagnostic approach, & therapeutic options
University of Sharjah (01/2019 – Present)		
1	17 Feb 2019	American Hospital Dubai, Lecture: The scope of clinical genetics
2	24 Apr 2019	The Heart Medical Center Pediatric Lecture Series, Lecture: The scope of clinical genetics
3	30 Jun 2019	American Hospital Dubai, Lecture: The scope of clinical genetics
4	15 July 2019	University Hospital Sharjah, Lecture: The scope of clinical genetics
5	09 Sep 2019	University of Sharjah, College of Medicine, first year medical students: Briefing: A child with abnormal facies (Down syndrome).
6	16 Sep 2019	University of Sharjah, College of Medicine, first year medical students: Lecture: Chromosomal abnormalities.
7	17 Sep 2019	Mediclinic City Hospital, Lecture: The scope of clinical genetics
8	17 Oct 2019	University of Sharjah, College of Medicine, fourth year medical students: Lecture: Introduction to inborn errors of metabolism.
9	29 Oct 2019	Corniche Hospital, Neonatology fellows: Lecture: MCQs: Genetics and Neonatology
10	12 Dec 2019	University of Sharjah, College of Medicine, fourth year medical students: Lecture: Introduction to inborn errors of metabolism.
11	21 Dec 2019	Mediclinic Al Ain Hospital, Lecture: The scope of clinical genetics
12	06 Feb 2020	University of Sharjah, College of Medicine, fourth year medical students: Lecture: Introduction to inborn errors of metabolism.
13	04 Mar 2019	Mediclinic Al Noor Hospital, Lecture: The scope of clinical genetics
14	12 April 2020	University of Sharjah, College of Medicine, fourth year medical students: Lecture: Introduction to inborn errors of metabolism.

Appendix 2: Presentations at scientific meetings

1. **El-Hattab AW**, Velinov M, Valencia G, Perenyi A. Very complex, *de novo* chromosomal abnormality in a newborn with multiple congenital defects- a counseling challenging. Poster at the American Society of Human Genetics (ASHG) 56th Annual Meeting. New Orleans, Louisiana, USA, October 9-13, 2006.
2. Li FY, Bawle E, Boles RG, **El-Hattab AW**, Schmitt E, Wong LJ. Mutations in the *OCTN2* (*SLC22A5*) gene detected in clinical testing of patients with carnitine deficiency. Poster at the American College of Medical Genetics (ACMG) Clinical Genetics Meeting. Tampa, Florida, USA, March 25-29, 2009.
3. **El-Hattab AW**, Li FY, Schmitt E, Zhang S, Craigen WJ, Wong LJ. *MPV17*-associated hepatocerebral mitochondrial DNA depletion syndrome: New patients and novel mutations. Poster at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Vienna, Virginia, USA, July 24-27, 2009.
4. Roy A, **El-Hattab AW**, Hicks MJ, Kearney DL, Bali DS, Finegold MJ. Novel mutation in glycogen branching enzyme in glycogen storage disease type IV. Poster at the College of American Pathologists (CAP) Pathologists Meeting. Washington, DC, USA, October 11-14, 2009.
5. **El-Hattab AW**, Li FY, Schmitt E, Zhang S, Craigen WJ, Wong LJ. *MPV17*-associated hepatocerebral mitochondrial DNA depletion syndrome: New patients and novel mutations. Poster at the American Society of Human Genetics (ASHG) 59th Annual Meeting. Honolulu, Hawaii, USA, October 20-24, 2009.
6. **El-Hattab AW**, Enciso V, Roeder ER, Grange DK, Sutton VR, Cheung SW, Patel A. Xq28 microduplications mediated by the homologous *int22h-1* and *int22h-2* in four cognitively impaired males. Poster at the American Society of Human Genetics (ASHG) 59th annual meeting. Honolulu, Hawaii, USA, October 20-24, 2009.
7. Sadikovic B, Wang J, **El-Hattab AW**, Douglas G, Landsverk M, Brundage EK, Schmitt ES, Wong LJ. Genetic mapping and clinical presentation of 65 patients with the mitochondrial deletion syndrome. Poster at the American College of Medical Genetics (ACMG) Clinical Genetics Meeting. Albuquerque, New Mexico, USA, March 24-28, 2010.
8. **El-Hattab AW**, Craigen W, Wong LJ, Jahoor F, Scaglia F. Arginine flux and nitric oxide production in subjects with MELAS syndrome and the effect of arginine and citrulline supplementation. **Invited oral presentation** at the Society for Inherited Metabolic Disorders (SIMD) 33rd annual meeting. Albuquerque, New Mexico, USA, March 28-31, 2010.
9. **El-Hattab AW**, Hsu JW, Craigen W, Wong LJ, Jahoor F, Scaglia F. Nitric oxide production in subjects with MELAS syndrome and the effect of arginine and citrulline supplementation: interim results. Poster at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Scottsdale, Arizona, USA, June 16-19, 2010.
10. **El-Hattab AW**, Hsu JW, Craigen W, Wong LJ, Jahoor F, Scaglia F. Nitric oxide production in subjects with MELAS syndrome and the effect of arginine and citrulline supplementation: interim results. Poster at the Society for the Study of Inborn Errors of Metabolism (SSIEM) Annual Symposium. Istanbul, Turkey, August 31 - September 3, 2010.
11. **El-Hattab AW**, Hsu JWC, Craigen W, Wong LJ, Jahoor F, Scaglia F. Nitric oxide production in subjects with MELAS syndrome and the effect of arginine and citrulline supplementation: interim results. **Platform oral presentation** at the American Society of Human Genetics (ASHG) 60th Annual Meeting. Washington, DC, USA, November 2-6, 2010.
12. **El-Hattab AW**, Hsu JWC, Jahoor J, Craigen W Scaglia F. Nitric oxide production in MELAS syndrome and the effect of arginine and citrulline. **Invited oral presentation** at the Society for Inherited Metabolic Disorders (SIMD) 34th Annual Meeting. Pacific Grove, California, USA, February 27 - March 2, 2011.
13. **El-Hattab AW**, Hsu JWC, Jahoor F, Scaglia F, CraigenW. Glucose kinetics in subjects with MELAS syndrome: interim results. Poster at the American College of Medical Genetics (ACMG) Clinical Genetics Meeting. Vancouver, British Columbia, Canada, March 16-20, 2011.
14. **El-Hattab AW**, Hsu JW, Wong LJ, Craigen W, Jahoor F, Scaglia F. Nitric oxide production in subjects with MELAS syndrome and the effect of arginine and citrulline supplementation: interim results. **Platform oral presentation** at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Chicago, Illinois, USA, June 15-17, 2011.
15. **El-Hattab AW**, Hsu JW, Wong LJ, Jahoor F, Scaglia F, Craigen W. Glucose kinetics in subjects with MELAS syndrome: interim results. Poster at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Chicago, Illinois, USA, June 15-17, 2011.
16. **El-Hattab AW**, Hsu JW, Wong LJ, Craigen W, Jahoor F, Scaglia F. Restoration of impaired nitric oxide production in MELAS syndrome with citrulline and arginine supplementation. **Platform oral presentation** at the Society for the Study of Inborn Errors of Metabolism (SSIEM) Annual Symposium. Geneva, Switzerland.

August 30 - September 2, 2011.

17. **El-Hattab AW**, Hsu JW, Wong LJ, Craigen W, Jahoor F, Scaglia F. Restoration of impaired nitric oxide production in MELAS syndrome with citrulline and arginine supplementation. Poster at the 12th International Congress of Human Genetics (ICHG) / 61st Annual Meeting of the American Society of Human Genetics (ASHG). Montreal, Canada, October 11-15, 2011.
18. **El-Hattab AW**, Emrick L, Hsu JW, Wong LJ, Jahoor F, Scaglia F, Craigen W. Glucose kinetics in subjects with MELAS syndrome: interim results. Poster at the Society for Inherited Metabolic Disorders (SIMD) Annual Meeting. Charlotte, North Carolina, USA, March 31 – April 3, 2012.
19. Peck D, Fang P, **El-Hattab AW**. *ASS1* novel mutation in an asymptomatic infant with citrullinemia type 1. Poster at the Society for Inherited Metabolic Disorders (SIMD) Annual Meeting. Charlotte, North Carolina, USA, March 31 – April 3, 2012.
20. Peck D, Fang P, **El-Hattab AW**. *ASS1* novel mutation in an asymptomatic infant with citrullinemia type 1. Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Charlotte, North Carolina, USA, March 28-30, 2012.
21. **El-Hattab AW**, Emrick L, Hsu JW, Wong LJ, Jahoor F, Scaglia F, Craigen W. Glucose kinetics in subjects with MELAS syndrome: interim results. **Platform oral presentation** at the United Mitochondrial Disease Foundation Mitochondrial (UMDF) Medicine Meeting. Bethesda, Maryland, USA, June 13-16, 2012.
22. Lee IC, **El-Hattab AW**, Wang J, Li FY, Weng SW, Wong LJ. *SURF1*-associated Leigh syndrome: A case-series and novel mutations. Poster at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Bethesda, Maryland, USA, June 13-16, 2012.
23. **El-Hattab AW**, Emrick L, Hsu JW, Wong LJ, Jahoor F, Scaglia F, Craigen W. Glucose kinetics in subjects with MELAS syndrome: interim results. Poster at the Society for the Study of Inborn Errors of Metabolism (SSIEM) Annual Symposium. Birmingham, UK, September 4-7, 2012.
24. Segal MM, Williams MS, Gropman AL, Torres AR, Forsyth R, Connolly AM, **El-Hattab AW**, Perlman SJ, Samanta D, Parikh S, Pavlakis SG, Betensky RA, Gospe SM Jr. An Evidence-Based, Open-Database Approach to Pediatric Neurologic Diagnostic Decision Support Reduces Errors in Diagnosis and Testing. Poster at the Child Neurology Society 41st Annual Meeting, Huntington Beach, California, USA, Oct 31 - Nov 3, 2012.
25. **El-Hattab AW,** Emrick L, Hsu JW, Wong LJ, Jahoor F, Scaglia F, Craigen W. Glucose kinetics in subjects with MELAS syndrome: interim results. **Platform oral presentation** at the American Society of Human Genetics (ASHG) 62nd Annual Meeting. San Francisco, California, USA, November 6-10, 2012.
26. **El-Hattab AW,** Emrick L, K. Williamson K, Craigen W, Scaglia F. The effect of citrulline and arginine supplementation on lactic acidemia in MELAS syndrome. Poster at the European Society of Human Genetics (ESHG) European Human Genetics Conference 2013. Paris, France, June 8-11, 2013.
27. **El-Hattab AW,** Emrick L, K. Williamson K, Craigen W, Scaglia F. The effect of citrulline and arginine supplementation on lactic acidemia in MELAS syndrome. Poster at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Newport Beach, California, USA, June 12-15, 2013.
28. **El-Hattab AW,** Emrick L, K. Williamson K, Craigen W, Scaglia F. The effect of citrulline and arginine supplementation on lactic acidemia in MELAS syndrome. Poster at the 12th International Congress of Inborn Errors of Metabolism (ICIEM 2013). Barcelona, Spain, September 3-6, 2013.
29. **El-Hattab AW**, Hsu JW, Emrick LT, Wong LJ, Craigen WJ, Jahoor F, Scaglia F. Restoration of impaired nitric oxide production in MELAS syndrome with citrulline and arginine supplementation. **Invited oral presentation** at the 12th International Congress of Inborn Errors of Metabolism (ICIEM 2013). Barcelona, Spain, September 3-6, 2013.
30. **El-Hattab AW,** Emrick L, K. Williamson K, Craigen W, Scaglia F. The effect of citrulline and arginine supplementation on lactic acidemia in MELAS syndrome. Poster at the American Society of Human Genetics (ASHG) 63nd Annual Meeting. Boston, Massachusetts, USA, October 22-26, 2013.
31. **El-Hattab AW**, Emrick LT, Chanprasert S, Hsu JW, Jahoor F, Scaglia F, Craigen WJ. Glucose metabolism derangements in adults with the MELAS mutation m.3243A>G. Poster at the Society for Inherited Metabolic Disorders (SIMD) Annual Meeting. Pacific Grove, California, USA, March 9-12, 2014.
32. **El-Hattab AW**, Emrick LT, Chanprasert S, Hsu JW, Jahoor F, Scaglia F, Craigen WJ. Glucose metabolism derangements in adults with the MELAS mutation m.3243A>G. Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Nashville, Tennessee, USA, March 26-28, 2014.
33. **El-Hattab AW.** Genomic rearrangements. **Invited oral presentation** at the Basic and Advanced Medical Genetics 6th Annual Review Course. King Fahad Medical City, Riyadh, Saudi Arabia, May 21, 2013.
34. **El-Hattab AW.** Treatment options for inborn errors of metabolism. **Invited oral presentation** at the Basic and Advanced Medical Genetics 7th Annual Review Course. King Fahad Medical City, Riyadh, Saudi

Arabia, May 21, 2014.

35. **El-Hattab AW.** *BRCA1* and *BRCA2*-related hereditary breast and ovarian cancer. **Invited oral presentation** at the 4th Emirates Gynecology Oncology Group (EGOG)/ Emirates Oncology and Obstetric Society meeting (Gynecological Oncology Updates). Dubai, United Arab Emirates, December 5, 2014.
36. **El-Hattab AW.** Genomic disorders. **Invited oral presentation** at the SEHA International Pediatric Conference. Al-Ain, United Arab Emirates, March 19-21, 2015.
37. **El-Hattab AW.** *BRCA1* and *BRCA2*-related hereditary breast and ovarian cancer. **Invited oral presentation** at the OBS-GYNE Exhibit and Congress, Dubai, United Arab Emirates, 27-29 March 2015.
38. **El-Hattab AW.** Chromosomal abnormalities in Down syndrome. **Invited oral presentation** at the Emirates Down Syndrome International Conference. Dubai, United Arab Emirates, 30 April – 2 May 2015.
39. **El-Hattab AW,** Emrick LT, Chanprasert S, Hsu JW, Almannai M, Craigen WJ, Jahoor F, Scaglia F. Utility of citrulline in treating hypoargininemia in children with MELAS. Poster at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Herndon, Virginia, USA, June 17-20, 2015.
40. Charng WL, Karaca E, Akdemir ZB, Gambin T, Atik MM, Jhangiani SN, The Baylor-Hopkins Center for Mendelian Genomics, Gibbs RA, Faqeih EA, Al Asmari A, Saleh MAM, **El-Hattab AW,** James R. Lupski**.** Rare Variant Identification in Saudi Children with Mendelian Neurologic Diseases. Poster at the American Society of Human Genetics (ASHG) Annual Meeting. Baltimore, Maryland, USA, October 6-10, 2015.
41. **El-Hattab AW,** Emrick LT, Chanprasert S, Hsu JW, Almannai M, Craigen WJ, Jahoor F, Scaglia F. Utility of citrulline supplementation in treating hypoargininemia in children with MELAS syndrome. Poster at the American Society of Human Genetics (ASHG) Annual Meeting. Baltimore, Maryland, USA, October 6-10, 2015.
42. **El-Hattab AW.** Modalities of genetic testing. **Invited oral presentation** at the SEHA 10th International Pediatric Conference. Abu Dhabi, United Arab Emirates, February 11-13, 2016.
43. **El-Hattab AW,** Emrick LT, Hsu JW, Chanprasert S, Almannai M, Craigen WJ, Jahoor F, Scaglia F. Impaired nitric oxide production in children with MELAS syndrome and the effect of arginine and citrulline supplementation. Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Tampa, Florida, USA, March 8-12, 2016.
44. Bayram Y, Harel T, Yesil G, Coban-Akdemir Z, Charng WL, Karaca E, Al Asmari A, Eldomery MK, Hunter JV, Jhangiani SN, Rosenfeld JA, Pehlivan D, **El-Hattab AW**, Saleh MA, LeDuc CA, Muzny D, Boerwinkle E, Baylor-Hopkins Center for Mendelian Genomics, Gibbs RA, WK Chung, Yang Y, Belmont JW, Lupski JR. Mono-allelic and bi-allelic variants in EMC1, implicated in ER-mitochondria communication, are associated with neurodegeneration. Poster at the European Society of Human Genetics (ESHG) European Human Genetics Conference 2016. Barcelona, Spain, May 21-24, 2016.
45. **El-Hattab AW,** Emrick LT, Hsu JW, Chanprasert S, Almannai M, Craigen WJ, Jahoor F, Scaglia F. Impaired nitric oxide production in children with MELAS syndrome and the effect of arginine and citrulline supplementation. **Platform oral presentation** at the United Mitochondrial Disease Foundation (UMDF) Mitochondrial Medicine Meeting. Seattle, Washington, USA, June 15-18, 2016.
46. Sampath S, **El-Hattab AW**. Autozygosity mapping using SNP based chromosomal microarray: opportunity to increase the clinical diagnostic yield in populations with high consanguinity. Poster at the American Society of Human Genetics (ASHG) Annual Meeting. Vancouver, Canada, October 18-22, 2016.
47. **El-Hattab AW.** N-acetylglutamate synthase (NAGS) deficiency: case presentation. **Invited oral presentation** at the 13th Middle East Metabolic Group (MEMG) meeting, Amman, Jordan, October 27-30, 2016.
48. **El-Hattab AW.** Mitochondrial diseases: mechanisms, manifestations, diagnostic approach, and therapeutic options. **Invited oral presentation** at the 4th Arab Pediatric Medical Congress, Dubai, United Arab Emirates, 2-4 March 2017.
49. Abdullatif MA, Al Dhaibani MA, Khassawneh MY, **El-Hattab AW.** Chromosomal microarray in a highly consanguineous population: diagnostic yield, utility of regions of homozygosity, and novel mutations. Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Phoenix, Arizona, USA, March 21-25, 2017.
50. Al Zaabi N, Hertecant J, Al Jasmi F, **El-Hattab AW**. Endothelial dysfunction and the effect of arginine and citrulline supplementation in children with mitochondrial diseases: interim results. Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Phoenix, Arizona, USA, March 21-25, 2017.
51. **El-Hattab AW**, Emrick LT, Hsu JW, Chanprasert S, Almannai M, Craigen WJ, Jahoor F, Scaglia F. Impaired nitric oxide production in children with MELAS syndrome and the effect of arginine and citrulline supplementation. **Invited oral presentation** at the 13th International Congress of Inborn Errors of Metabolism (ICIEM 2017). Rio de Janeiro, Brazil, September 5-8, 2017.

52. Al Zaabi N, Hertecant J, Al Jasmi F, **El-Hattab AW**. Endothelial dysfunction and the effect of arginine and citrulline supplementation in children with mitochondrial diseases: interim results. **Platform oral presentation** at the 13th International Congress of Inborn Errors of Metabolism (ICIEM 2017). Rio de Janeiro, Brazil, September 5-8, 2017.

53. **El-Hattab AW**, Dai H, Almannai M, Wang J, Wong LJ. Molecular and clinical spectra of FBXL4 deficiency. Poster at the 13th International Congress of Inborn Errors of Metabolism (ICIEM 2017). Rio de Janeiro, Brazil, September 5-8, 2017.

54. **El-Hattab AW.** Recognizable syndromes in the newborn period. **Invited oral presentation** at the 3rd Abu Dhabi International Neonatal Multispecialty Conference, Abu Dhabi, United Arab Emirates, 16-18 November 2017.

55. **El-Hattab AW.** Mitochondrial diseases. **Invited oral presentation** at the 5th Annual Arab International Pediatric Medical Congress, Dubai, United Arab Emirates, 1-4 February 2018.

56. **El-Hattab AW.** Case scenarios in inborn errors of metabolism presenting with hypoglycemia. **Invited oral presentation** at the 5th International Pediatric Conference of Columbia University Medical Center/ NYP Hospital & KidsHeart Medical Center, Al-Ain, United Arab Emirates, 14-16 March 2018.

57. **El-Hattab AW.** Dysmorphology terminology and genetic syndromes. **Invited oral presentation** at the 5th International Pediatric Conference of Columbia University Medical Center/ NYP Hospital & KidsHeart Medical Center, Al-Ain, United Arab Emirates, 14-16 March 2018.

58. Hertecant J, Al Jasmi F, **El-Hattab AW**. Endothelial dysfunction and the effect of arginine and citrulline supplementation in children with mitochondrial diseases: interim results. Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Charlotte, North Carolina, 10-14 April 2018.

59. Glinton KE, Benke PJ, Lines MA, Geraghty MT, Chakraborty P, Al-Dirbashi OY, Jiang Y, Kennedy AD, Grotewiel MS, Sutton VR, Elsea SH, **El-Hattab AW**. Disturbed phospholipid metabolism in serine biosynthesis defects revealed by metabolomic profiling. Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Charlotte, North Carolina, 10-14 April 2018.

60. Sirr A, Scott A, Cromie G, Heyesus M, **El-Hattab AW**, Alkuraya F, Dudley A. Yeast surrogate genetic approaches for functional predictions of genetic variants related to inborn errors of metabolism. **Platform oral presentation** at the American Society of Human Genetics (ASHG) Annual Meeting. San Diego, California, USA, October 16-20, 2018.

61. Beetz C, Kdissa A, Karageorgou V, Ameziane N, Bauer P, Suleiman J, Sutton VR, **El-Hattab AW**. A homozygous VPS26C nonsense variant is associated with a novel syndromic phenotype. Poster at the European Society of Human Genetics (ESHG) European Human Genetics Conference 2019. Gothenburg, Sweden, June 15–18, 2019.

62. **El-Hattab AW**. The utility of whole exome sequencing in prenatal settings. **Invited oral presentation** at the United Arab Emirates Fetal Medicine Meeting, Raffles, Dubai, United Arab Emirates, 12 February 2019.

63. Al-Sweel N, Openshaw A, Lamb A, Hong B**, El-Hattab AW**, Andersen E. Typical and Atypical Duplications within the Recurrent Xq28 int22h1/int22h2-Flanked Region to Expand Genotype-Phenotype Correlation**.** Poster at the American College of Medical Genetics (ACMG) Annual Clinical Genetics Meeting. Seattle, Washington, USA, 2-6 April 2019.

64. **El-Hattab AW**. Dysmorphology and genetic syndromes. **Invited oral presentation** at the 7th International Pediatric Conference of Columbia University Medical Center/NYP Hospital & KidsHeart Medical Center, Dubai, United Arab Emirates, 20 - 22 March 2019.

65. **El-Hattab AW**. Case scenarios in Clinical Genetics: Common complaints as presenting manifestations. **Invited oral presentation** at the 7th International Pediatric Conference of Columbia University Medical Center/NYP Hospital & KidsHeart Medical Center, Dubai, United Arab Emirates, 20 - 22 March 2019.

66. **El-Hattab AW**. Metabolic diseases presenting with seizures. **Invited oral presentation** at the 3rd Annual Dubai International Pediatric Neurology Congress, Dubai, United Arab Emirates, 04 – 06 April 2019.

67. **El-Hattab AW.** Modalities of genetic testing. **Invited oral presentation** at the Emirati Pediatric Neurology Network Meeting, Dubai, United Arab Emirates, 19 April 2019.

68. **El-Hattab AW.** Cardiovascular Genetics. **Keynote presentation** at the World Pediatric Cardiology and Cardiovascular Surgery Congress, Dubai, United Arab Emirates, 9-10 September 2019

69. **El-Hattab AW.** Genetic syndromes associated with bone tumors. **Invited oral presentation** at the Emirates Orthopedics Society meeting, Dubai, 25 September 2019

70. **El-Hattab AW.** Overgrowth syndrome. **Invited oral presentation** at the Emirati Pediatric Neurology Network Meeting, Dubai, United Arab Emirates, 4 October 2019.

71. **El-Hattab AW**. Utilities and limitations of various genetic testing modalities. **Invited oral presentation** at the 8th International Pediatric Conference of Columbia University Medical Center/NYP Hospital & KidsHeart

Medical Center, Al-Ain, United Arab Emirates, 9 – 11 October 2019.

72. **El-Hattab AW.** Metabolic emergencies of inborn errors of metabolism. **Invited oral presentation** at the Emirates Pediatric and Neonatal Intensive Care Conference (EPNIC), Al Jalila Children's Specialty Hospital, Dubai, 6-8 November 2019.
73. **El-Hattab AW.** Overgrowth syndrome. **Invited oral presentation** at the 5th Annual International Pediatric Medical Congress, Dubai, United Arab Emirates, 14-16 November 2019.
74. **El-Hattab AW.** From rare disease to LSD. **Invited oral presentation** at the 2nd Gulf Rare Disease Academy, Dubai, United Arab Emirates, 15-16 November 2019.
75. **El-Hattab AW.** Pediatric neuromuscular disorders: genetic basis and management updates. **Invited oral presentation** at 1st Neuropedia Conference on Neuromuscular Diseases in Children NEUROPEDICON 2020, Dubai, United Arab Emirates, 10 January 2020.
76. **El-Hattab AW.** Modalities of genetic testing and the utility of whole exome sequencing. **Invited oral presentation** at the Neurosciences Update, Cleveland Clinic Abu Dhabi, Abu Dhabi, United Arab Emirates, 29 January 2020.
77. **El-Hattab AW.** Modalities of genetic testing: Clinical implications. **Invited oral presentation** at the 8th Pediatric & Neonatal International Conference of University Hospital Sharjah (UHS), Dubai, 13-14 February 2020.