

## **CURRICULUM VITAE**

Name : Muntaser El Tayeb Ibrahim  
Academic status : Professor  
Date of birth : 17 June 1957, Omdurman, Sudan  
Citizenship : Sudanese  
Marital status : Married

### **ADDRESS:**

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### **ACADEMIC HISTORY AND TRAINING:**

1964-1976 : Elementary, Intermediate and secondary schools.

1980 : B. Sc. Zoology and chemistry, University of Zagazig, Egypt.

1982 : Diploma in Medical Entomology&Parasitology Cairo University.

1987 : M.Sc. in Zoology, University of Khartoum.

1991-1994: Ph.D Faculty of Health Science, University of Copenhagen Denmark.

### **EMPLOYMENT :**

2006- to date: Professor Of Molecular Biology, Institute of Endemic Diseases, University of Khartoum.

2002- 2006 Associate Professor and Head Department of Molecular Biology, Institute of Endemic Diseases, University of Khartoum.

1997-2002: Assistant Professor, Institute of Endemic Diseases, University of Khartoum.

1997-1998: Wellcome Visiting Research Fellow, Department of Pathology, University of Cambridge. Affiliated to Christ college, University of Cambridge.

1983-1997: Research Scientist, National Health Laboratory Sudan.

### **Memberships and consultancies**

- Council of college of post graduate studies, Uof K, 1999-
- Neglected Diseases Group, A network of experts that help the DNDi (neglected diseases initiative) addresses the crisis in R&D in neglected diseases.2003-
- Editorial board of the Journal of Genomics & African Society (Cape Town) 2004.
- Editorial board of the Journal of Molecular and Genetic Medicine (Oxford)
- Council of Scientific Advisors (CSA) of the International Center for Genetic Engineering and Biotechnology 2004-
- Sudanese National Academy of Sciences (elected Secretary General 2005-)
- External examiner at the Universities of London, Elgezira, Sudan and Azhari.
- Consultation meetings for the WHO/TDR, EMRO and the Wellcome Trust.

**SCIENTIFIC PUBLICATIONS IN PEER REVIEWED JOURNALS (last twelve years) :**

1. -**Ibrahim ME**, Smyth AJ, Ali MH, Barker DC, Kharazmi A (1994). The polymerase chain reaction can reveal the occurrence of naturally mixed infection with *Leishmania* parasite *Acta Tropica*, 57: 327-332.
2. -**Ibrahim ME**, Hag- Ali M, El Hassan AM, Theander TG, Kharazmi A (1994). *Leishmania* resistant of sodium stibogluconate: drug associated macrophage dependent killing. *Parasitology Research*, 80:569-574.
3. -Seielsted MT, Harbet JM, Lin AA, Underhill P, **Ibrahim ME**, Vollarth, Cavalli-Sforza LL (1994) Constructing of human Y-chromosomal Haplotypes using a new polymorphic A to G transition. *Human Molecular Genetics*, 3 (12) : 2159-2161.
4. -**Ibrahim ME**, Evans DE, Theander TG, El Hassan M, Kharazmi A. (1995) Diversity among *Leishmania* isolates from the Sudan, isoenzyme homogeneity of *L.donovani* versus heterogeneity of *L.major*. *Transactions of Royal Society of Tropical Medicine and Hygiene*, 89:370-371.
- 5-Andresen K, **Ibrahim ME**, Theander TG, Kharazmi A (1996) Random amplified polymorphic DNA for the differentiation of *Leishmania donovani* isolates from Sudan. *Trans R Soc Trop Med Hyg*, 90, 204-205.
- 6-**Ibrahim ME**, Suliman A, Hashim FA, Khalil EAG, Evans DA, Kharazmi A, ElHassan AM.(1997) Oro-nasal leishmaniasis caused by a parasite of an unusual isoenzyme profile. *American Journal of Tropical Medicine and Hygiene*: 56: 96-98.
- 7-Seielstad M, Bekele E, **Ibrahim M**, Toure A, and Traore M (1999) Y chromosome microsatellite diversity and a recent African origin for modern humans, *Genome Research*.
- 8-Elhassan AM, Khalil E.A.G., Elsheikh EA, Zijlstra EE, Osman A. & **Ibrahim ME**. (1998). Post Kala-azar ocular leishmaniasis. *Transaction of the Royal Society of Tropical Medicine & Hygiene*, 92:177-179.
- 9-Khalil E.A.G., Elhassan AM, Zijlstra EE, Hashim FA, **Ibrahim ME**, Ghalib HW & Ali MS. (1998). Treatment of visceral leishmaniasis with sodium stibogluconate in Sudan: management of those who do not respond. *Annals of Tropical Medicine & Parasitology*. 92(2): 151-158.
- 10-Seielstad M, Bekele E, **Ibrahim M**, Toure A, and Traore M (1999) Y chromosome microsatellite diversity and a recent African origin for modern humans, *Genome Research*, 9, 558-67.

**11-Ibrahim ME**, Lambson B, Osman A, Daifalla N, Yousif H, Al Naeem DA, Khalil EAG, Kadaru A, Ghalib HW, Barker DC, El Hassan AM (1999) Kala-azar in a high transmission foci: An ethnic and geographical dimension.. Am J Trop Med Hyg, 61,941-944.

12-Underhill, P.A., Shen, P., Lin, A.A., Passarino, G., Yang, W.H., Kauffman, E., Bonne-Tamir, B., Bertranpetit, J., Francalacci, P., **Ibrahim, M.**, Jenkins, T., Kidd, J.R., Mehdi, S.Q., Seielstad, M.T., Wells, R.S., Piazza, A., Davis, R.W., Feldman, M.W., Cavalli-Sforza, L.L., and Oefner, P.J. 2000. Y chromosome sequence variation and the history of human populations. Nature Genet. **26**:358-361

13-Khalil EAG, Elsiddig, KE, Elsafi MEMO, El-Hag, Elkhidir IM, Suleiman G, Hussein AM, **Ibrahim ME**. & Elhassan A.M (2000). Supra-sternal tuberculous abscess: a report of three cases; Medicine and Hygiene 94:1-3.

14-Khalil EA, El Hassan AM, Zijlstra EE, Mukhtar MM, Ghalib HW, Musa B, **Ibrahim ME**, Kamil AA, Elsheikh M, Babiker A, Modabber F.(2000) Autoclaved *Leishmania major* vaccine for prevention of visceral leishmaniasis: a randomized, double-blind, BCG-controlled trial in Sudan, Lancet. 356 (9241):1565-9.

**15- Ibrahim ME** and DC Barker (2001) The origin and evolution of The *Leishmania donovani* complex as inferred from a mitochondrial cytochrome oxidase II gene sequence Infection Genetics and Evolution, 1, 61-68.

16- Blackwell JM, Goswami T, Evans CA, Sibthorpe D, Papo N, White JK, Searle S, Miller EN, Peacock CS, Mohammed H, **Ibrahim M.** *SLC11A1* (formerly *NRAMP1*) and disease resistance. *Cell Microbiol* 2001 Dec;3(12):773-84

17-Masri MA, Abdel Seed NM, Fahal AH, Romano M<sup>3</sup>, Baralle F, El Hassan AM and **Ibrahim ME**.(2002) Minor Role for BRCA2 (exon11) and p53 (Exon 5-9) among Sudanese breast cancer patients. Breast Cancer Research and Breast Cancer Res Treat 2002 Jan;71(2):145-7

**18-ME Ibrahim**: The epidemiology of visceral leishmaniasis in east Africa: hints and molecular revelations. In Molecular Epidemiology of Parasitic diseases. Edited by J Alvar and DC Barker Trans R Soc Trop Med Hyg 2002 Apr;96 Suppl 1:S25

19-Fadl-Elmula I, Kytola S, Leithy ME, Abdel-Hameed M, Mandahl N, Elagib A, **Ibrahim M**, Larsson C, Heim S (2002).Chromosomal aberrations in benign and malignant bilharzia-associated bladder lesions analyzed by comparative genomic hybridization. BMC Cancer . 22;2(1):5

20-Bereir REH<sup>1</sup>, Mohamed HS<sup>1,3</sup>, Selestad M, El Hassan AM<sup>1</sup>, Khalil EAG<sup>1</sup>, Peacock CS<sup>3</sup>, Blackwell JM<sup>3</sup>, **Ibrahim ME**. (2003) Allele frequency and genotype distribution of polymorphisms within disease-related genes in is influenced by ethnic population sub-structuring. Genetica 119(1):57-63.

21-Mohamed Hiba S , **Muntaser E. Ibrahim**, E. Nancy Miller, Christopher S. Peacock, Eltahirk A. G. Khalil, Heather J. Cordell, Joanna M. M. Howson, A. M. El Hassan, Rihab E.H. Bereir and Jenefer M. Blackwell (2003) Genetic susceptibility to visceral leishmaniasis in The Sudan: Linkage and association with IL4 and IFNGR1. *Genes and Immunity*. 4, 351-355.

22 -Kamil AA, Khalil EA, Musa AM, Modabber F, Mukhtar MM, **Ibrahim ME**, Zijlstra EE, Sacks D, Smith PG, Zicker F, El-Hassan AM.(2003). Alum-precipitated autoclaved *Leishmania major* plus bacille Calmette-Guerrin, a candidate vaccine for visceral leishmaniasis: safety, skin-delayed type hypersensitivity response and dose finding in healthy volunteers. *Trans R Soc Trop Med Hyg*. 97(3):365-8

23-Aljafari AS, Khalil EA, Elsiddig KE, El Hag IA, **Ibrahim ME**, Elsafi ME, Hussein AM, Elkhidir IM, Sulaiman GS, Elhassan AM (2004) Diagnosis of tuberculous lymphadenitis by FNAC, microbiological methods and PCR: a comparative study. *Cytopathology*. 15(1):44-8

24-Mohamed HS, **Ibrahim ME**, Miller EN, White JK, Cordell HJ, Howson JMM, Peacock CS, Khalil EAG, Elhassan AM, Blackwell JM (2004) SLC11A1 (formerly NRAMP1) and susceptibility to visceral leishmaniasis in the Sudan. *European Journal of Human Genetics*. 12(1):66-74.

**25-Blackwell, J.M., Mohamed, H.S. and Ibrahim, M.E.** (2004) Genetics and visceral leishmaniasis in The Sudan. *Trends in Parasitology*, 20(6):268-74

26 -Mahdi M, Elamin EM, Melville SE, Musa AM, Blackwell JM, Mukhtar MM, Elhassan AM, **Ibrahim ME** (2004) Sudanese mucosal leishmaniasis: isolation of a parasite within the *Leishmania donovani* complex that differs genotypically from *L. donovani* causing classical visceral leishmaniasis. *Infect Genet Evol*. 2005 Jan;5(1):29-33.

27 -Khalil EA, Ayed NB, Musa AM, **Ibrahim ME**, Mukhtar MM, Zijlstra EE, Elhassan IM, Smith PG, Kieny PM, Ghalib HW, Zicker F, Modabber F, Elhassan (2005) AM Dichotomy of protective cellular immune responses to human visceral leishmaniasis. *Clin Exp Immunol*. 140(2):349-53.

28- Elamin EM, Guerbouj S, Musa AM, Guizani I, Khalil EA, Mukhtar MM, Elkadaro AM, Mohamed, HS, **Ibrahim ME**, Abdel Hamid MM, El Azhari M, El Hassan AM (2005). Uncommon clinical presentations of cutaneous Leishmaniasis in Sudan. *Trans RSocTropMedHyg*.99(11):803-8

29-Alleithi M, Gisselsen D, Neilsen T, Alagib A, **Ibrahim ME**, Fadel-Elmula I (2006) Deletion (X)(p11) carrying SRY sequences in a sudanese infant with ambiguous genitalia. *BMC Pediatr*. 4;6:11.

- 30 -Ismail A, Khalil EA, Musa AM, El Hassan IM, **Ibrahim ME**, Theander TG, El Hassan AM ( 2006) The pathogenesis of post kala-azar dermal leishmaniasis from the field to the molecule: does ultraviolet light (UVB) radiation play a role? *Med Hypotheses*. 66(5):993-9
- 31-Blackwell, J.M., Mohamed, H.S. and **Ibrahim, M.E.** (2004) Genetics and visceral leishmaniasis in The Sudan. *Trends in Parasitology*, 20(6):268-74
- 32 -Mohammed AO, Attalla B, Bashir FMK, Ahmed FE, Elhassan AM, Ibauf G, Jiang W, Cavali-sforza L.L, Karrar Z. **Ibrahim ME** (2006) the relationship of the sickle cell gene to the ethnic and geographic groups populating the sudan. *Community Genetics*. 9(2):113-20
- 33- Nawal Tagelsir, Abdelraheem ZA, Medani A, Salih O, Hamad A, Giha H, El-Agib A, Khan B, Saeed NS, **Ibrahim ME** (2006) High frequency of *Plasmodium falciparum* PfcRT K76T and Pfpgh N86Y in patients who clear after Chloroquine treatment in the Sudan. *Acta Tropica*. 97(1):19-25
- 34 -Sharief AH, Gasim Khalil EA, Theander TG, Kharazmi A, Omer SA, Ibrahim ME (2006). *Leishmania donovani*: an in vitro study of antimony-resistant amphotericin B-sensitive isolates. *Exp Parasitol*. 2006 Dec;114(4):247-52.
- 35-Sarah A. Tishkoff, Floyed A.Reed, Alessia Ranciaro, Benjamin F. Voight, Courtney C.Babbit, Jesse S. Silverman, Kweli Powell, Holly Mortensen, Jibril. B. Hirbo, Maha Osman, **Muntaser Ibrahim**, Sabah A. Omar, Jilur Ghorri, Suzannah Bumpstead, Jonathan K. Pritchard, Gregory A. Wary, Panos Delouckas(2007) Convergent adaptation in humans: the genetic basis of lactase persistence in Africa. *Nature Genetics*,39(1):31-40.
- 36-Mohamed A. Salih, **Muntaser E. Ibrahim**, Jenefer M. Blackwell, E. Nancy Miller, Eltahir A. G. Khalil, Ahmed M. ElHassan, Ahmed M. Musa and Hiba S. M2007) ohamed (IFNG and IFNGR1 gene polymorphisms and susceptibility to post-kala-azar dermal leishmaniasis in Sudan (2007) *Genes Immun*. 2007 Jan;8(1):75-8.
- 37 -Miller N, Fadl M, Mohamed HS, Elzein A, Jamieson, Cordell, Peacock, Fakiola, Khalil EAG, Elhassan AM, Musa, **Ibrahim ME**, Blackwell JM (2007) Y chromosome lineages tagvillage specific genes on chromosomes 1p22 an 6q27 that control leishmaniasis in the Sudan. *PLoS Genet*. 1;3(5):e71
- 38-Bereir RE, Hassan HY, Salih NA, Underhill PA, Cavalli-Sforza LL, Hussain AA,Kwiatkowski D, **Ibrahim ME** (2007) Co-introgression of Y-chromosome haplogroups and the sickle cell gene across Africa's Sahel. *Eur J Hum Genet*. 2007 Nov;15(11):1183-5.

39-Allam MM, Alkadarou TA, Ahmed BG, Elkhair IS, Alansary EH, **Ibrahim ME**, Elhassan AM, Elhassan IMHyper-reactive Malarial Splenomegaly (HMS) in malaria endemic area in Eastern Sudan. *Acta Trop*. 2008 Feb;105(2):196-9

40-Hisham Y. Hassan, Peter A. Underhill, Luca L. Cavalli-Sforza, **Muntaser E. Ibrahim** Y-chromosome variation among Sudanese: restricted gene flow, concordance with language, geography and history. *Am J Ph Anthropol. IAM J Phys Anthropol*. 2008 Nov;137(3):316-23.

41-Hassan DA, Arez AP, Mohamed HS, Elhoussein AM, Ibrahim ME, Abdulhadi NH. The reduced sequestration of Plasmodium-falciparum-infected erythrocytes among malaria cases with sickle-cell trait: in-vivo evidence from Sudan. *Ann Trop Med Parasitol*. 2008 ;102(8):743-8.

**42 -Muntaser E. Ibrahim**, Muzamil A. Mahdi, Rihab E. Bereir , Rania S Giha, and Christina Wasunna. Evolutionary conservation of RNA editing in the genus *Leishmania*. *Infection Genetics and Evolution*. 8(3):378-80.

43-Malaria Genomic\_Epidemiology Network. A global network for investigating the genomic epidemiology of malaria.. *Nature*. 2008 Dec 11;456(7223):732-7.

44-Sirugo G, Hennig BJ, Adeyemo AA, Matimba A, Newport MJ, **Ibrahim ME**, Ryckman KK, Tacconelli A, Mariani-Costantini R, Novelli G, Soodyall H, Rotimi CN, Ramesar RS, Tishkoff SA, Williams SM. *Hum Genet*. Genetic studies of African populations: an overview on disease susceptibility and response to vaccines and therapeutics.1;123(6):557-98.

45-Jallow M, Teo YY, Small KS, Rockett KA, Deloukas P, Clark TG, Kivinen K, Bojang KA, Conway DJ, Pinder M, Sirugo G, Sisay-Joof F, Usen S, Auburn S, Bumpstead SJ, Campino S, Coffey A, Dunham A, Fry AE, Green A, Gwilliam R, Hunt SE, Inouye M, Jeffreys AE, Mendy A, Palotie A, Potter S, Ragoussis J, Rogers J, Rowlands K, Somaskantharajah E, Whittaker P, Widdens C, Donnelly P, Howie B, Marchini J, Morris A, Sanjoaquin M, Achidi EA, Agbenyega T, Allen A, Amodu O, Corran P, Djimde A, Dolo A, Doumbo OK, Drakeley C, Dunstan S, Evans J, Farrar J, Fernando D, Hien TT, Horstmann RD, **Ibrahim M**, Karunaweera N, Kokwaro G, Koram KA, Lemnge M, Makani J, Marsh K, Michon P, Modiano D, Molyneux ME, Mueller I, Parker M, Peshu N, Plowe CV, Puijalon O, Reeder J, Reyburn H, Riley EM, Sakuntabhai A, Singhasivanon P, Sirima S, Tall A, Taylor TE, Thera M, Troye-Blomberg M, Williams TN, Wilson M, Kwiatkowski DP; Wellcome Trust Case Control Consortium; Malaria Genomic Epidemiology Network. Genome-wide and fine-resolution association analysis of malaria in West Africa. *Nat Genet*. 2009 May 24.

46-Tishkoff SA, Reed FA, Friedlaender FR, Ehret C, Ranciaro A, Froment A, Hirbo JB, Awomoyi AA, Bodo JM, Doumbo O, **Ibrahim M**, Juma AT, Kotze MJ, Lema G, Moore JH, Mortensen H, Nyambo TB, Omar SA, Powell K, Pretorius GS, Smith

MW, Thera MA, Wambebe C, Weber JL, Williams SM. Science. 2009. The genetic structure and history of Africans and African Americans May 22;324(5930):1035-44.

47 -Hassan DA, Marques C, Santos-Gomes GM, do Rosario VE, Mohamed HS, Elhussein AM, Ibrahim ME, Abdulhadi NH( 2009) Differential expression of cytokine genes among sickle-cell-trait (HbAS) and normal (HbAA) children infected with Plasmodium falciparum. Ann Trop Med Parasitol. 2009 Jun;103(4):283-95

48-Blackwell JM, Fakiola M, Ibrahim ME, Jamieson SE, Jeronimo SB, Miller EN, Mishra A, Mohamed HS, Peacock CS, Raju M, Sundar S, Wilson MEGenetics and visceral leishmaniasis: of mice and man. Parasite Immunol. 2009. 31(5):254-66.

49-Nevein A Salih, Ibrahim Almugtaba, Abeir Elzein, Ayman Hussein, Ibrahim M Elhassan, Eltahir AG Khalil, Hani Ishag, Hiba Salah, Dominic Kwiatkowski, **Muntaser E. Ibrahim**. 2010 Loss of Balancing Selection in the  $\beta$ S, Globin Locus in a nonpanmictic African population. BMC Med Genet. 3;11(1):21.

50-Farouk S., **Ibrahim ME**, Salih MA, Blackwell JM, Miller Nancy, Khalil EAG, ElHassan AM, Musa AM and Mohamed HS. (2009). Interleukin-10 gene polymorphisms and development of post Kala-azar dermal leishmaniasis (PKDL) in a selected Sudanese population. Public Health Genomics. 2009 Dec 29. [Epub ahead of print].

51-Emad-Aldin I. Osman, Kamal Hamad, Imad M. Fadl Elmula, Muntaser E. Ibrahim (2010) Frequencies of BCR-ABL fusion transcripts among Sudanese Chronic Myeloid Leukaemia patients. Genetics and Molecular Biology (Accepted).

52-Chiaroni J, King RJ, Myres NM, Henn BM, Ducourneau A, Mitchell MJ, Boetsch G, Sheikha I, Lin AA, Nik-Ahd M, Ahmad J, Lattanzi F, Herrera RJ, **Ibrahim ME**, Brody A, Semino O, Kivisild T, Underhill PA. Eur J Hum Genet. 2010 Mar;18(3):348-53. Epub

53-Abdelbadea A M Elhassan, Ayman Hussein, Hiba S Mohamed, Ahmed M Elhassan, **Muntaser E. Ibrahim**. 2010. The 5q31 Region in Two African Populations as a Facet of Natural Selection by Infectious Diseases. Genetics Infection and Evolution (Submitted)

### **Conferences Meetings (past four years, Invited speaker)**

-Populations of the Sudan, a Genetic Perspective in retrospect. 2<sup>nd</sup> meeting on the Genetics of the Population of The Sudan and East Africa 2002.

- The Genetics of Ethnicity and Disease, Medical Genetics in the developing World, Course at the ICGEB Trieste Italy 2003.
- Molecular Diagnostics and therapeutics a viable case for Africa 1<sup>st</sup> World Biotechnology Forum 2-5 March Concepcion Chile 2004 (invited speaker)
- Health Genes and Culture from an African population perspective, 2<sup>nd</sup> Annual Africa Genome Conference. Cairo, March 2004.
- Genotypic and phenotypic correlates of susceptibility to malaria in two populations of different ethnic origins in eastern Sdaun BioMalrPar Heidelberg 2-4 March 2005
- Visceral leishmaniasis in the Sudan: a centenary of a serial killer. Brazilian Society of Protozoology, Coxambu 7-10 Nov 2005 (**key Note speaker**)
- Genetic diversity and disease, What could be learnt from the Y chromosome. 4<sup>th</sup> Annual conference of the African Society of Human Genetics. Addis Ababa June 2006.
- Cancer in Africa: Complexity meets diversity. African Society of Human Genetics, Yaounde Cameroon, March 2009 (Invited speaker).

**Supervision and coordination of course:** Supervised over 40 Masters and Ph.Ds in the past ten years. **Coorganizer** of several courses and workshops locally, regionally and internationally. Now the coordinator of the Diploma/M.Sc. degree in Molecular Medicine offered by the graduate college of the University of Khartoum and coorganizer of the annual Khartoum Winter School of Bioinformatics and Statistical Genetics (past 4 years)

**Books:**

- **M E Ibrahim** and AM Elhassan “Sudan” Pocket Guide to Cultural Health Assessment, third edition Edited By Carolyn E. D’Avanzo, RN, DNSc. Elsevier.
- Dissecting The Racial mind, Assays on race and Science (in press)
- **Translations:** The Great Human Disparities, The history of human genetic diversity and evolution, By LL.Cavalli-Sforza (to Arabic)

**Grants awarded:**

- The genetic diversity of Leishmania parasites from Sudan based on DNA and protein polymorphism (TDR/ World Health Organization). 1995-1997
- Wellcome Visiting Research Fellow, University of Cambridge, 1997-1998 Department of Pathology, studying the Genetics of the parasite *Leishmania donovani*
- Leishmanin skin testing serology and the polymerase chain reaction in the establishment of man as possible reservoir for Leishmania infection (World Health Organisation). 1997-1998
- Characterization of a possible signal transduction pathway for the action of the antileishmanial drug Pentostam (Third World Academy of Science).



- Genetic epidemiology in Sudan (International Centre for Genetic Engineering and Biotechnology).1997-2000
- Kala-zar in the Sudan, The role of Host and parasite genetics in in determining Disease outcome, (The Wellcome Trust, Collaborative Research Grant (Principal applicant) 1999-2002 .
- Genetic Susceptibility to Visceral Leishmaniasis: Comparative studies in India, Sudan and Brazil (Co-applicant)
- Detection of drug resistant malaria and tuberculosis supported by IAEA (RAF/6/025) regional project  
The epidemiological components of cutaneous leishmanas outbreaks in Tuti island, a field and simulation approach (World Health Organisation EMRO). 2002-2003.
- Genetic diversity and susceptibility to malaria . 2004- Part of the BioMalPar consortium funded by the European Union.

### **Current research interest**

- Study of endemic non-infectious and infectious diseases in relation to the population genetics and human genetic diversity, including the role of disease in shaping the current ethno-geographical picture of the area
- Screening for known and novel polymorphisms that underlies particular disease phenotypes, employing an integrated approach towards understanding the relationship of mankind to disease, which takes into consideration the evolutionary aspects in the relations of microbes and Man as well as the complex biological-cultural nature of human evolution. The main set of information generated in the center of disease and diversity is related to the genetic polymorphism in *Homo sapiens* and their most common pathogens as well as disease vectors.

### **Languages:**

- Arabic Mother tongue
- English: fluent speaking reading and writing skills.
- Spanish: modest knowledge