

*In the Name of the Almighty God*

**The National Ribat University**

**Faculty of Post Graduate Studies**

**Detection of the genetic modifiers of haemoglobin F level  
BCL11A and HS1L-MYB region in Sudanese patients with  
homozygous sickle cell disease**

A thesis submitted in fulfillment of the requirements for the award of  
PhD in Haematology.

**By**

**Mouna Adel Sama'an Wahba**

M.Sc Haematology. Juba University

**Supervisor : Prof. Anwaar A.Y. Kordofani**

MBBS , U of K. DCP,FRC Path,UK.

Department of pathology , Faculty of medicine ,University  
of Khartoum.

**Co-supervisor : Dr. Ahmed Abd Al Malik Daak**

MBBS, U of K. MSC , PhD (UK).

Department of biochemistry, Faculty of medicine, University Of Khartoum

March 2017

تُعَرِّفُنِي سَبِيلَ الْحَيَاةِ. أَمَامَكَ شَبَعُ سُورٍ. فِي يَمِينِكَ نِعْمٌ إِلَى  
الْأَبَدِ

مزمور 16 : 11