ESCOLA SUPERIOR DE TECNOLOGIA DA SAÚDE DE LISBOA
INSTITUTO POLITÉCNICO DE LISBOA

POLITÉCNICO DE LISBOA

H&TRC
Health and Technology Research Center

Sickle Cell disease – The same disease different approaches

O estudo da anemia das células falciformes: uma doença, diferentes estudos

Miguel Brito,
Mariana Delgadinho, Catarina Ginete & Edna Ribeiro

encontro CIÊNCIA '22
ENCONTRO COM A CIÊNCIA E TECNOLOGIA EM PORTUGAL
16 a 18 MAIO 2022
#ciencia2022PT

CENTRO DE INVESTIGAÇÃO EM SAÚDE E TECNOLOGIA (H&TRC)

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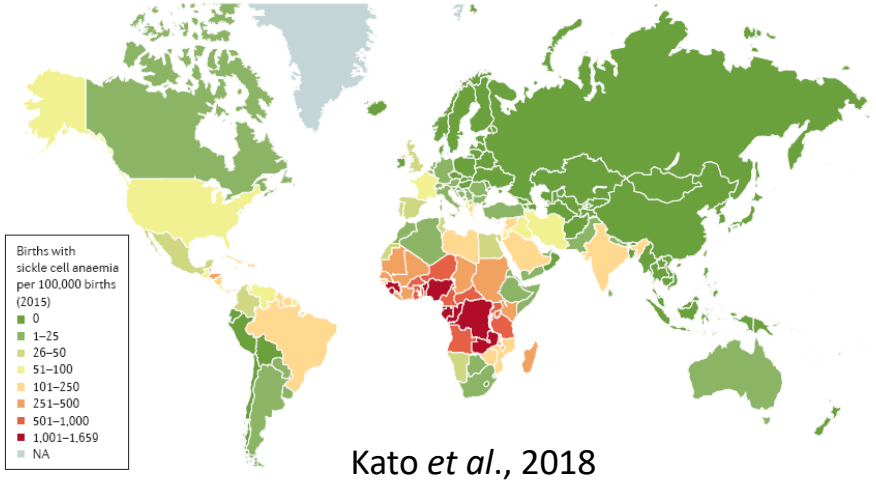
Sickle Cell Disease (SCD)



Kato *et al.*, 2018

In 2006, WHO identified SCD as a significant public health problem in Africa that may contribute to up to 16% of under-5 mortality.

- SCD is caused by a structural variation of hemoglobin which results from a substitution at position 6 of the beta globin molecule (Glu to Val).
- Prevalence in Angola is 1.5%, with 21% carriers of S allele
- Prevalence is increasing in Europe due to past and present migration
- Clinical manifestations occur from hemolysis and vaso-occlusion phenomena and can be acute and chronic
- Great heterogeneity in SCD phenotype
- Disease protective genetic modifiers act mainly through an increased HbF level
- Genetic and Epigenetic mechanisms are associated with HbF regulation

International Collaboration

Health and Technology Research Center (H&TRC) at Lisbon School of Health Technology, Lisbon Polytechnic Institute, Portugal

A successful South North cooperation since 2012

CISA
CENTRO DE INVESTIGAÇÃO EM SAÚDE DE ANGOLA

Health Research Center of Angola (CISA)

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Ongoing studies:

AKDN Aga Khan Development Network

FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

Research project in the SCD cohort - **SCAFfoldChild -** 200 SCD Angolan children

Alpha-thalassemia deletion in SCD influences the hematological and clinical aspects and produces a mild phenotype.

Molecular Biology Reports
https://doi.org/10.1007/s11033-020-05628-8

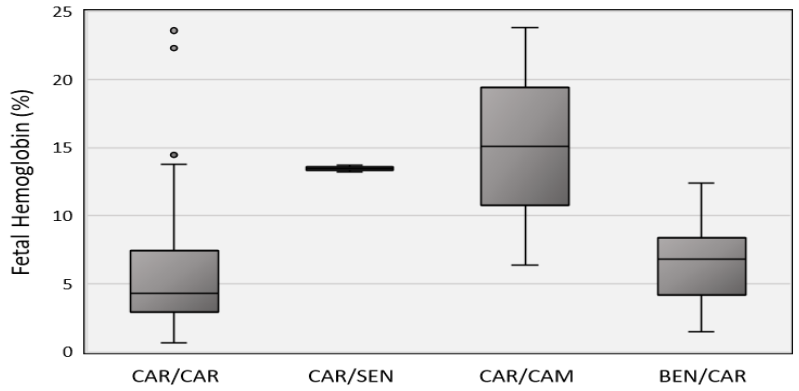
ORIGINAL ARTICLE

Check for updates

Co-Inheritance of alpha-thalassemia and sickle cell disease in a cohort of Angolan pediatric patients

Brígida Santos[1,2] · Mariana Delgadinho[3] · Joana Ferreira[3] · Isabel Germano[4] · Armandina Miranda[4] · Ana Paula Arez[5] · Paula Faustino[4,6] · Miguel Brito[1,3]

Important biomarkers for personalized medicine in SCD follow-up



International Journal of Environmental Research and Public Health

MDPI

Article

Genotypic Diversity among Angolan Children with Sickle Cell Anemia

Mariana Delgadinho [1], Catarina Ginete [1], Brígida Santos [2,3], Armandina Miranda [4] and Miguel Brito [1,2,*]

[1] H&TRC—Health & Technology Research Center, ESTeSL—Escola Superior de Tecnologia da Saúde,

The polymorphism in BCL11A important SCD phenotype modifier

The non coding gene BGLT3 important factor in gamma globin expression

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Ongoing studies:

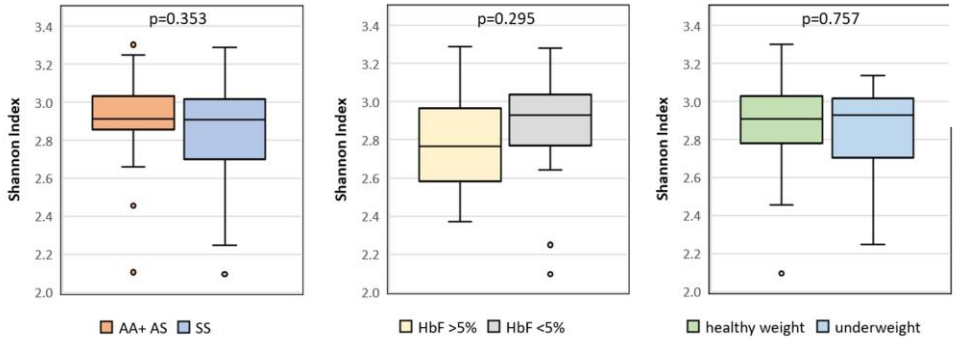
New therapeutic targets

How SCD modulates the intestinal microbiome?

Can HU treatment influence the microbiome composition?

Which bacteria are associated with mild/severe symptoms?

Association with clinical parameters



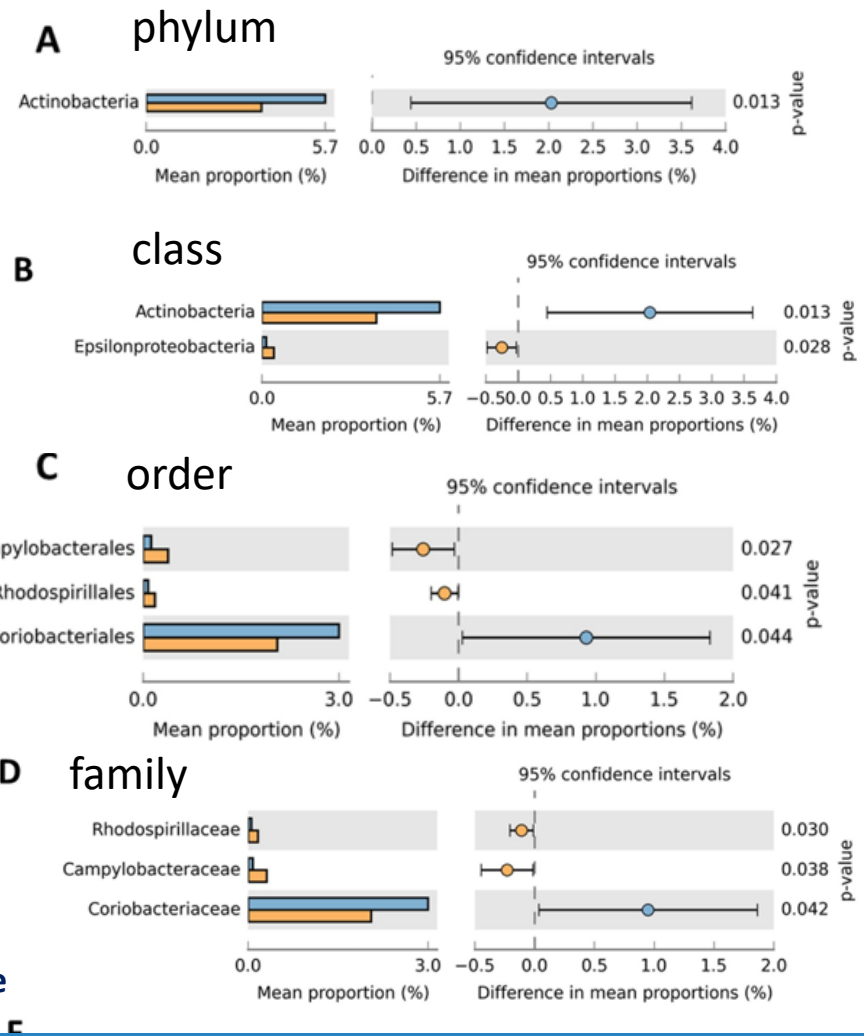
Therapeutic Targets for the Microbiome

Genera

Clostridium cluster XI more prevalent in the SCA children,

Siblings had a higher abundance of *Blautia, Aestuariispira, Campylobacter, Helicobacter, Polaribacter* and *Anaerorhabdus*

In press 2022 - Journal of Cellular and Molecular Medicine



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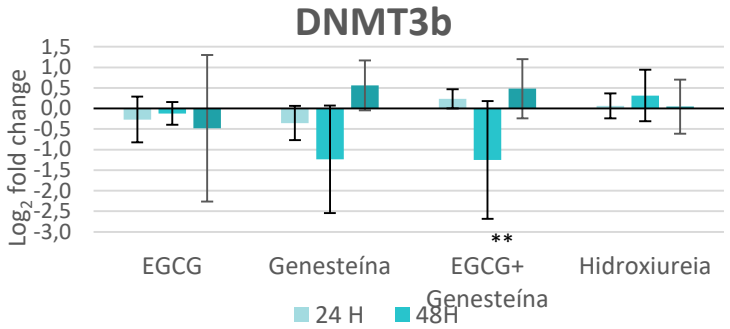
Ongoing studies:

New Therapeutic approaches

Test the effect of natural compounds on the reactivation of the *γ-globin* gene and induction of HbF in human cell lines

- Potential effects on the transcriptional levels of the gene regulators of *γ-globin* silencing
- Evaluate the potential in the induction of globins mRNA expression by RT-qPCR
- Evaluate the effect on epigenetic modulators (DNMT and HDAC genes)
- Evaluate the effect in regulation of miRNA



Journal Pre-proof *Clinical Complementary Medicine and Pharmacology*

Epigenetic and Transcriptional Modulator Potential of Epigallocatechin-3-gallate and Genistein on Fetal Hemoglobin Reactivators Genes

Edna Ribeiro , Mariana Delgadinho , Elisabete Matos , Raquel Santos , Daniela Sousa , Heloísa Galante , Miguel Brito

DOI: https://doi.org/10.1016/j.ccmp.2022.100034

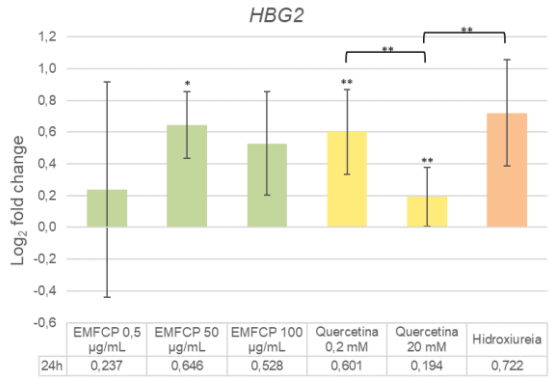
Genistein (GN)

Major isoflavone found in soy and its derivatives

Epigallocatechin-3-gallate (EGCG)

Major catechin of green tea

Extrato de *Carica papaya*



	EMFCP 0,5 µg/mL	EMFCP 50 µg/mL	EMFCP 100 µg/mL	Quercetina 0,2 mM	Quercetina 20 mM	Hidroxiureia
24h	0,237	0,646	0,528	0,601	0,194	0,722

Thanks for your attention

Acknowledgments

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