



ICRC

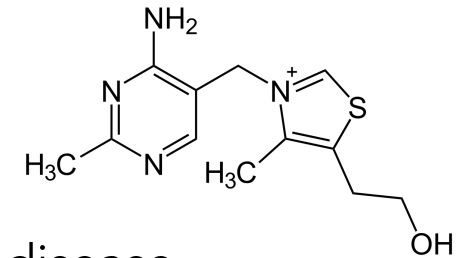
Feasability of a salivary diagnostic test for detection of thiamine (Vit-B1) deficiency

In the region of Dianra in Central-Northern Ivory Coast

Thiamine (Vit-B1) deficiency

Vit-B1

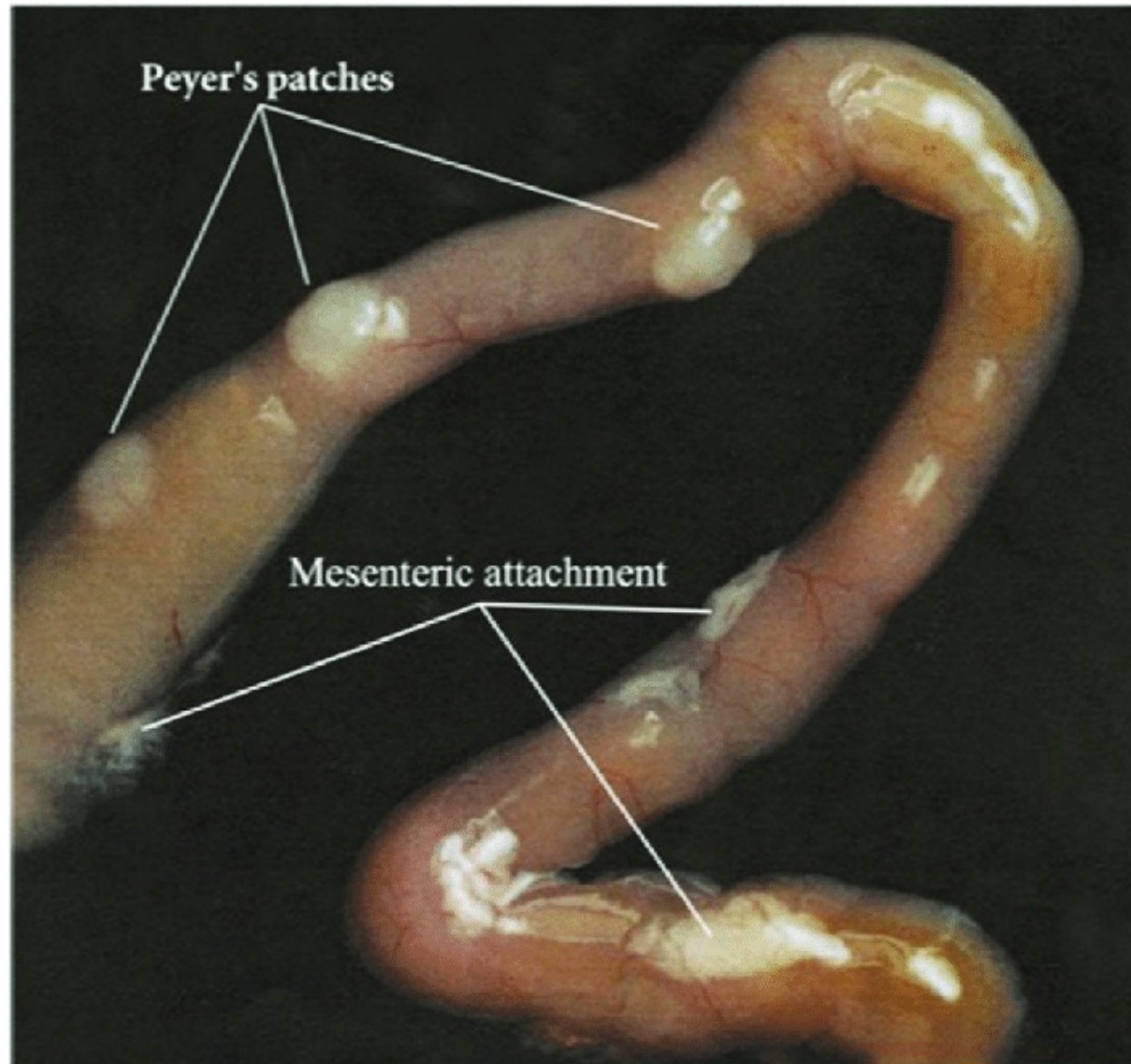
- Stores in body last for 3 months
- Dietary intake is essential
- Deficiency causes disease called beriberi
- Beriberi is a debilitating neurodegenerative disease



Challenge

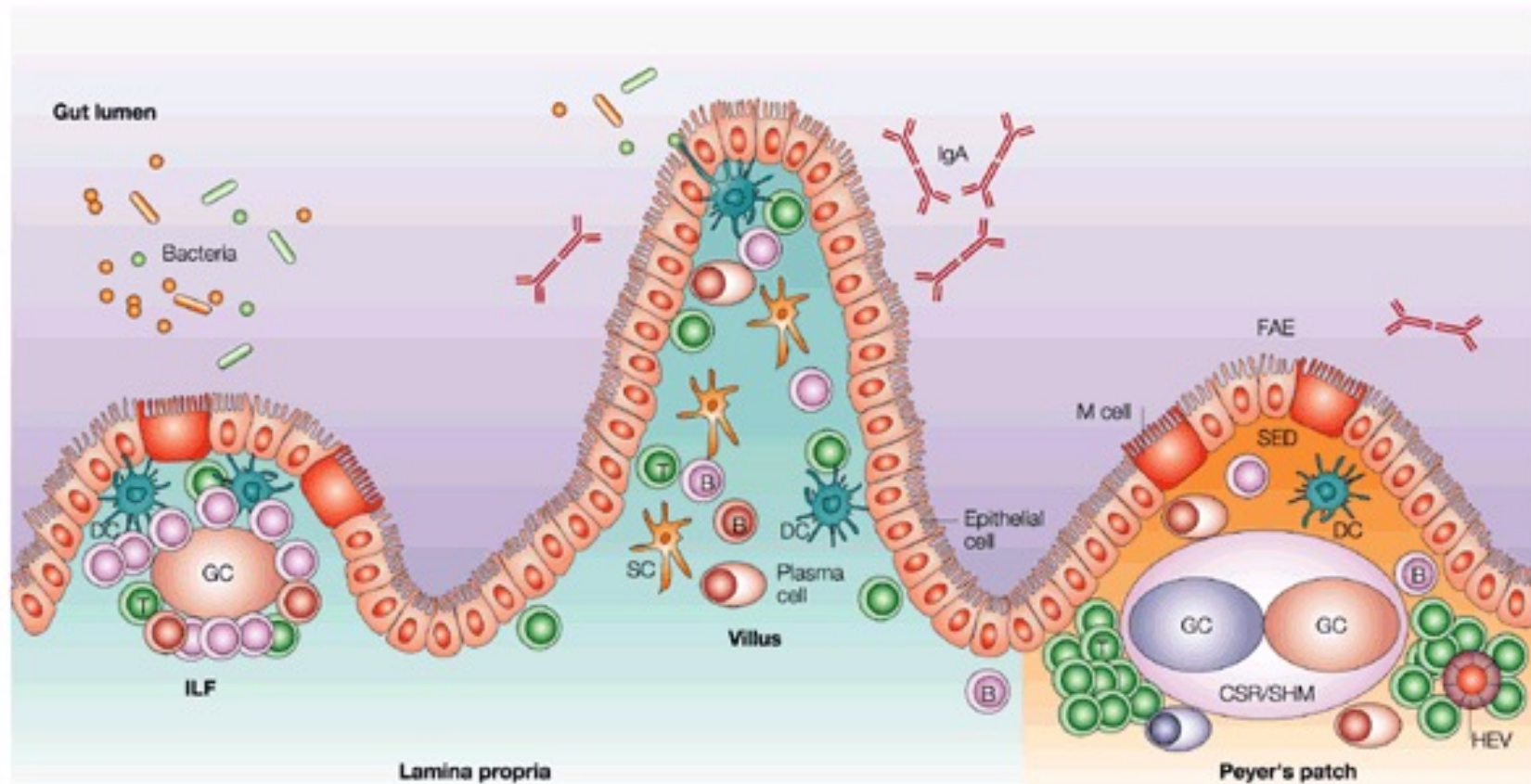
- Vit-B1 deficiency is endemic in Sub-Saharan-Africa & remote regions of South-East Asia
- Refugees and detainees disproportionately affected
- Rapid disease onset (3 months)
- Permanent nerve and brain damage
- Diagnosis requires invasive blood test and lab analysis
- Rapid non-invasive diagnostic test needed for detection of Vit-B1 deficiency

Peyer's patches are white blood cell agglomerates in the intestine



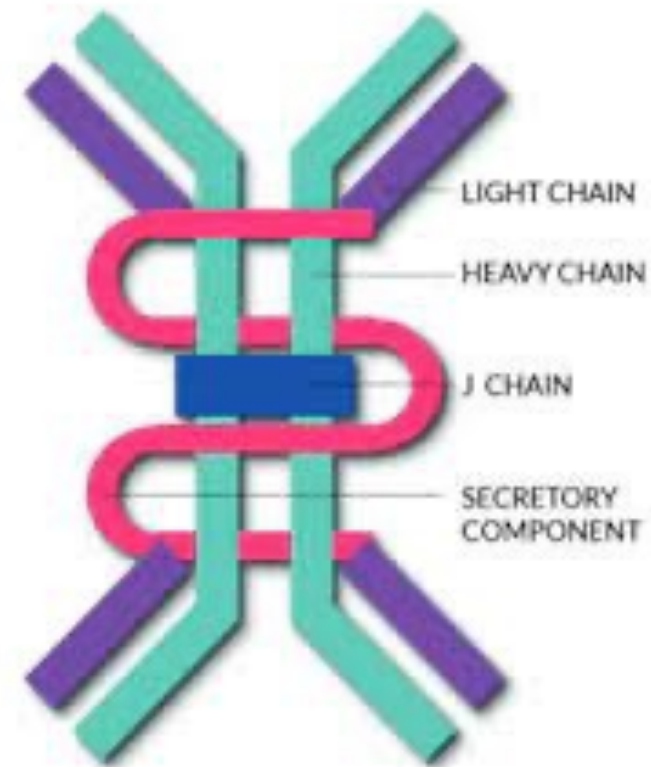
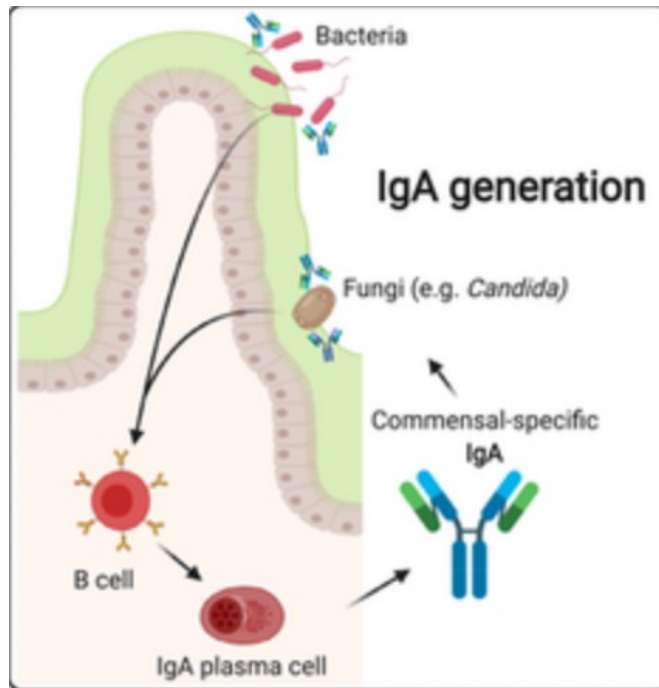
Secretory Immunoglobulin A (IgA) synthesis requires Peyer's patches

sIgA helps to maintain beneficial microbiota and exclude pathogens



Secretory IgA is produced by plasma B cells that reside in mucosa

sIgA



- Plasma cells are professional antibody secreting cells
- IgA plasma B cells reside in the mucosa for 3 weeks and then are replaced

Mice lacking Vit-B1 do not produce IgA plasma cells in the mucosa

> [Cell Rep.](#) 2015 Oct 6;13(1):122-131. doi: 10.1016/j.celrep.2015.08.063. Epub 2015 Sep 24.

FULL TEXT LINKS



ACTIONS

“ Cite

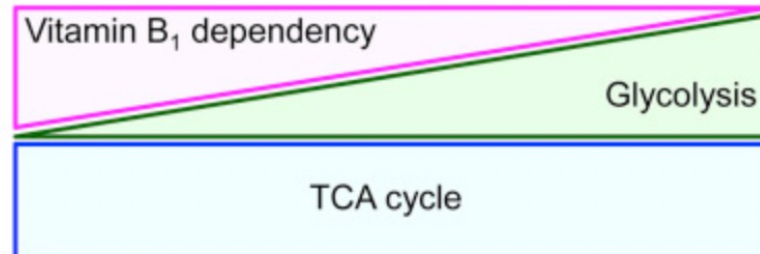
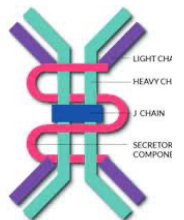
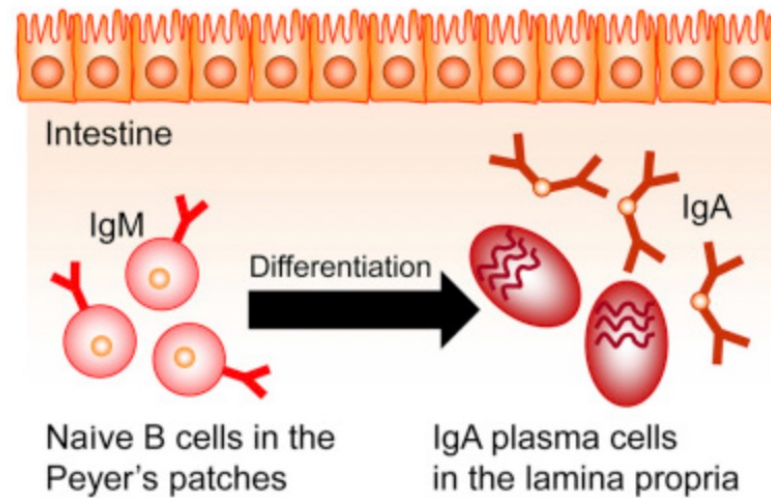
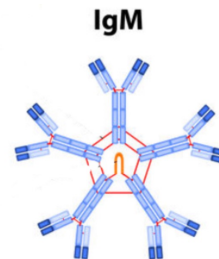
🔖 Collections

Mode of Bioenergetic Metabolism during B Cell Differentiation in the Intestine Determines the Distinct Requirement for Vitamin B1

Jun Kunisawa¹, Yuki Sugiura², Taichi Wake³, Takahiro Nagatake⁴, Hidehiko Suzuki⁴, Risa Nagasawa⁵, Shiori Shikata⁵, Kurara Honda², Eri Hashimoto⁵, Yuji Suzuki³, Mitsutoshi Setou⁶, Makoto Suematsu⁷, Hiroshi Kiyono⁸

Affiliations + expand

PMID: 26411688 DOI: [10.1016/j.celrep.2015.08.063](#)

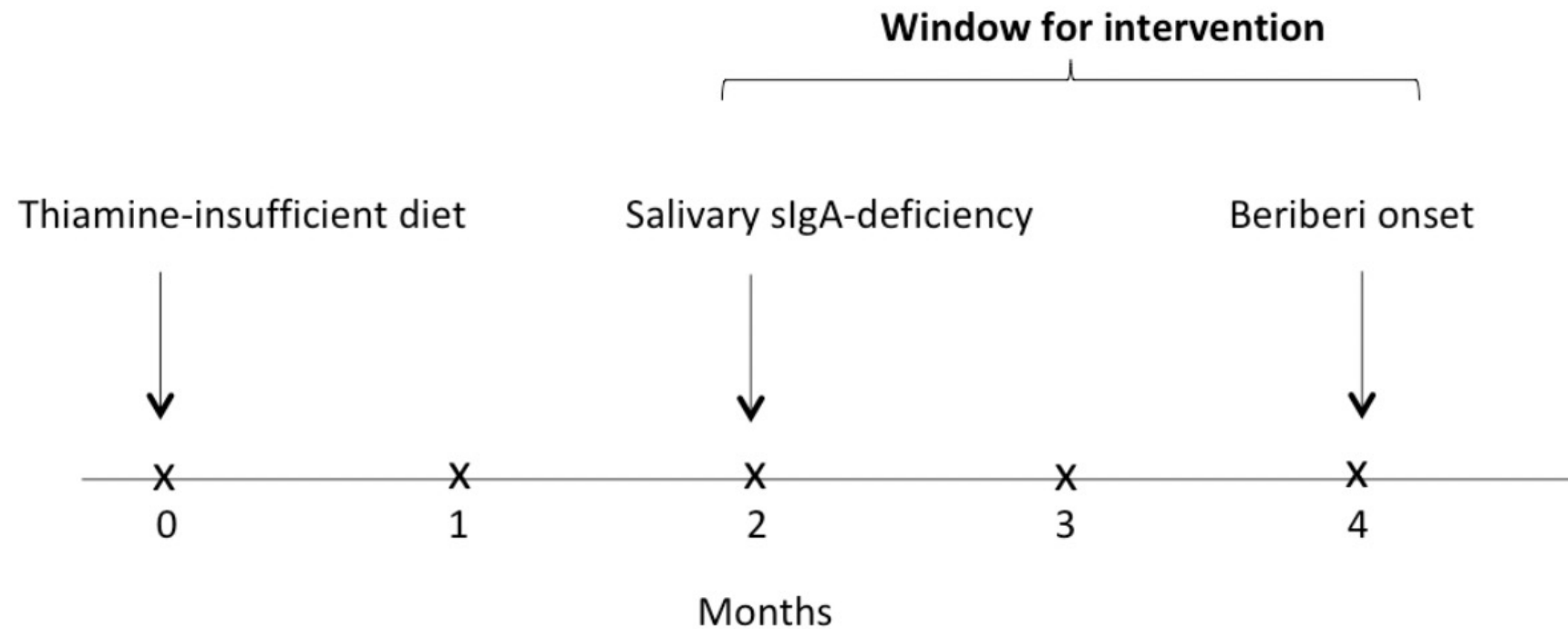


slgA summary

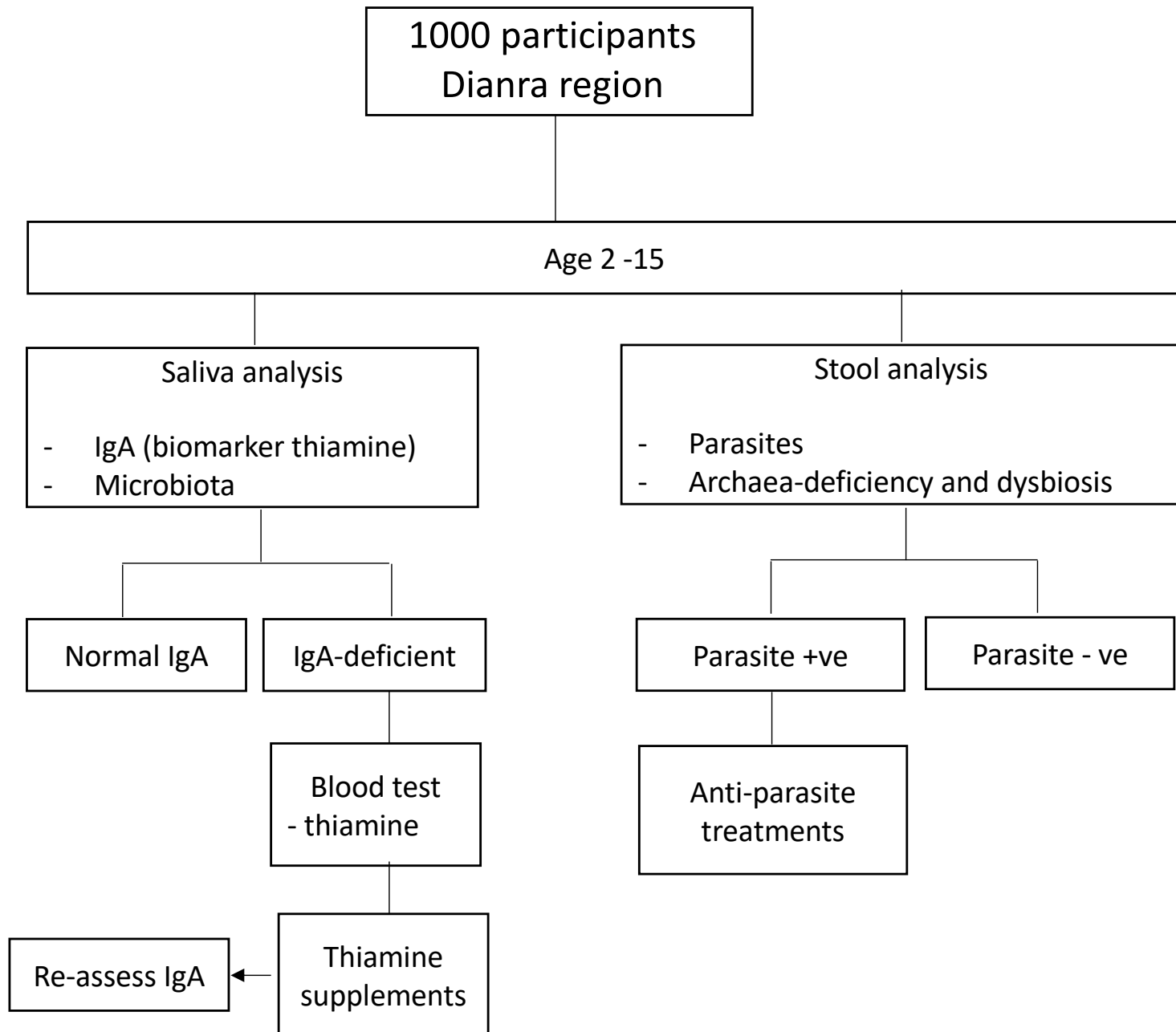
- Secretory IgA (slgA) is perpetually produced in the intestine
- slgA helps to maintain beneficial microbiota and exclude pathogens
- slgA is produced by plasma B cells in the mucosa
- Plasma B cells are formed in the Peyer's patches in the intestine
- Peyer's patches are agglomerations of white blood cells
- Mice lacking Vit-B1 do not have IgA plasma cells in the mucosa
- IgA plasma cell formation in Peyer's patches requires Vit-B1
- IgA secretions are present in oral saliva

Is sIgA deficiency a potential biomarker for thiamine deficiency?

Hypothesis



Survey in North-Central Ivory Coast in regions with endemic Vit-B1 deficiency



Masters Research opportunities

Project 1.

Evaluation of salivary IgA from Ivory Coast cohorts in relation to nutrient deficiency

2023-2024

Project 2.

Evaluation of gut archaea / microbiota from Ivory Coast cohorts in relation to parasite load

2024