

Central immunological position of the human blood group O(H).

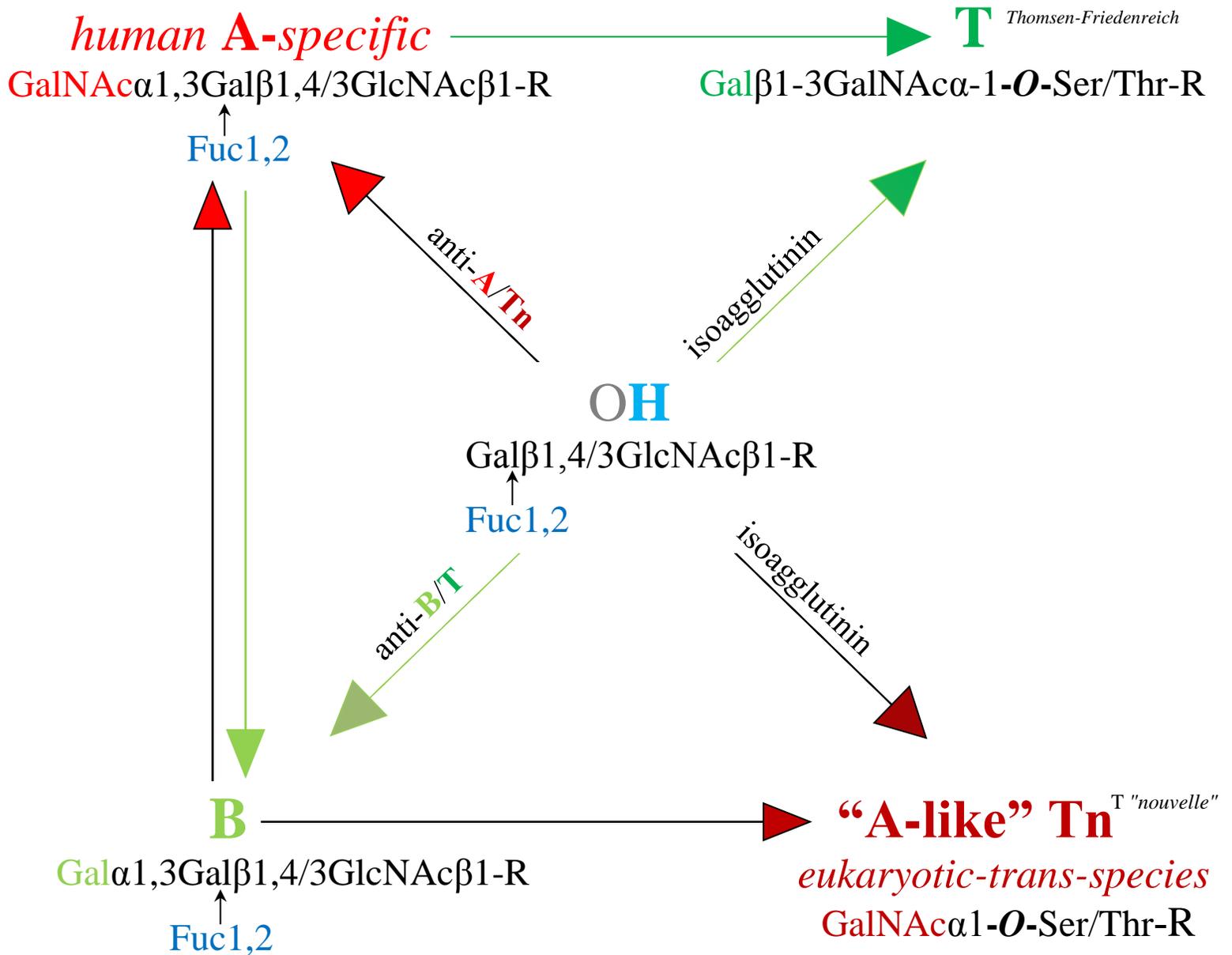
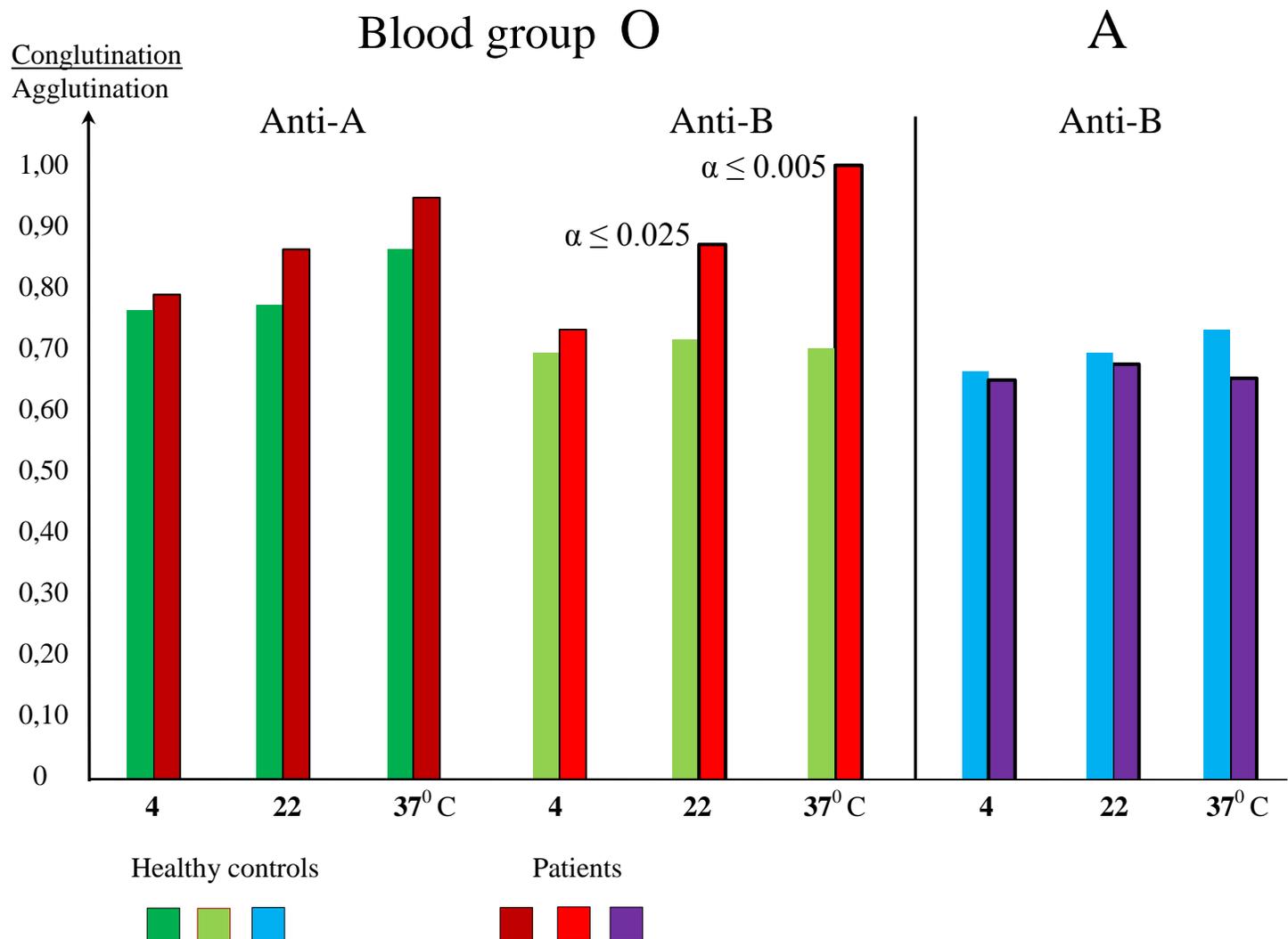


Fig. 1

Prokaryotic "blood group A/B-like" antigenic structures apparently induce basically cross-reactive anti-A/B immunoglobulins<sup>1,2</sup>, which due to clonal selection can neither arise in blood group A nor in B individuals. While bacterial endotoxins non-specifically stimulate the formation of immunoglobulins, most likely involving the anti-A/B isoagglutinins, a definite, adaptive induction of these agglutinins appears, according to the old observations<sup>1</sup>, to be restricted to blood group O(H) individuals. In fact, in blood group O(H) patients suffering from ulcerative colitis that is associated with an increased enteral absorption, a statistically significant, adaptive immune response was exclusively measured for an anti-B-reactive 7S (IgG) immunoglobulin when compared with blood group A plasma, in which the 7S and 19S (IGM) anti-B levels remained in the normal range<sup>1</sup>, as illustrated in Fig. 2. Thus, in the non-O blood groups, the classic complement-binding anti-A and anti-B isoagglutinin specificities are probably exerted by a non-immune IgM molecule that has undergone the phenotype-specific, glycosidic accommodations of plasma proteins.<sup>3,4</sup> Consequently, the central immunological position of the human histo (blood) group O(H) becomes evident in its comprehensive presentation of both non-immune IgM<sup>3,4</sup> and (largely restricted to this group)<sup>1</sup> adaptive IgM/IgG antibodies against all non-O(H) blood groups, involving their cross-specific developmental and/or "aberrant" structures<sup>5</sup>, as there are the early eukaryotic, trans-species *O*-glycans, T (Thomsen-Friedenreich)<sup>6</sup> and Tn, "T nouvelle" antigen,<sup>7</sup> Fig. 1. These ancestral glycans arise from *O*-glycosylations that are, with similar peptide backbones, already used by lower eukaryotes, such as mollusks and the fruit fly *Drosophila melanogaster*,<sup>8,9</sup> moreover, in the snail *Helix pomatia* are associated with the release of a hexamerically<sup>10</sup> structured Tn-complementary, hemagglutinating defense protein.

# Selective immune response of blood group O individuals to increased enteral absorption.



Spontaneous variations in the production of anti-A/B isoagglutinins in individuals suffering from ulcerative colitis and in normal persons were investigated under double-blind conditions. The grade of immunization and dominance of the 7S (IgG) and 19S (IgM) immunoglobulins were determined through the quotients of conglutinin and agglutinin titers at three different temperatures. While the blood group O patients showed a marked increase of both anti-A and B-levels and statistical significance of the anti-B reactivities by the non-parametric Wilcoxon procedure, the anti-B antibody levels in blood A patients may indicate a reverse tendency. The figure is reconstructed from the data published in: Arend, P. & Fehlhaber, G. Varying influence of increased enteral antigenabsorption on the behavior of "natural" antibodies in O and A blood group subjects. Comparative blood group serological studies on patients with ulcerative colitis and healthy persons [Article in German]. *J Mol Med (Klinische Wochenschrift)*. 1969; 47 (10): 535-541. doi:10.1007/BF01715818.<sup>1</sup>

Fig. 2

## References.

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