

Ethnic endotypes in pediatric atopic dermatitis depend on immunotype, lipid composition, and microbiota of the skin

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February 23, 2023

Abstract

Background: Atopic dermatitis (AD) endotypes differ with ethnicity. We examined the skin microbiota, cytokine-, and lipid-profiles in Greenlandic Inuit and Danish children with AD. **Methods:** 25 Inuit children with AD and 25 Inuit control children were clinically examined and compared to previously collected data from 25 Danish children with AD. Skin tape strips and skin swabs were collected from lesional and non-lesional skin. Levels of cutaneous immune biomarkers, free sphingoid bases and their (glycosyl)ceramides were analyzed. Skin swabs were analyzed with 16S rRNA and *tuf* gene for characterization of bacterial species communities. **Results:** Bacterial β -diversity was significantly different between Inuit and Danish AD skin, in both lesional ($p < 0.001$) and non-lesional ($p < 0.001$) AD skin, and there was a higher relative abundance of *Staphylococcus aureus* in Danish compared to Inuit lesional (53% vs. 8%, $p < 0.01$) and non-lesional skin (55% vs. 5%, $p < 0.001$). Danish AD children had a higher α -diversity than Inuit children in non-lesional ($p < 0.05$) but not in lesional skin. Significantly higher levels of type 2 immunity cytokine interleukin (IL)-4 ($p < 0.05$) and IL-5 ($p < 0.01$) were identified in Inuit compared to Danish AD children. In contrast, IL-33 ($p < 0.01$) was higher in Danish lesional and non-lesional AD skin. Higher levels of long-chain glucosylceramide (GlcCER)[S](d26:1) were found in lesional ($p < 0.001$) and non-lesional ($p < 0.001$) Inuit skin compared with Danish AD skin. NMF levels were similar in Inuit and Danish AD skin. **Conclusion:** Skin microbiota, cytokine and lipid composition differed significantly between Inuit and Danish children with AD and showed a stronger type 2 immune signature in Inuit children.

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Ethnic endotypes in pediatric AD.edit.docx available at <https://authorea.com/users/589146/articles/626119-ethnic-endotypes-in-pediatric-atopic-dermatitis-depend-on-immunotype-lipid-composition-and-microbiota-of-the-skin>

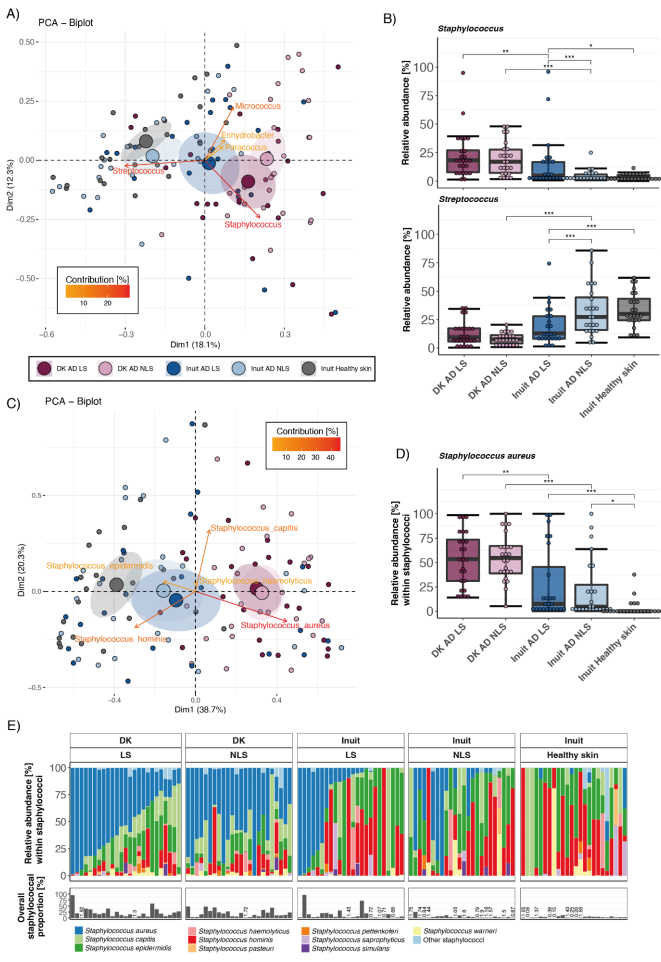


Figure 1_Andersson et al.

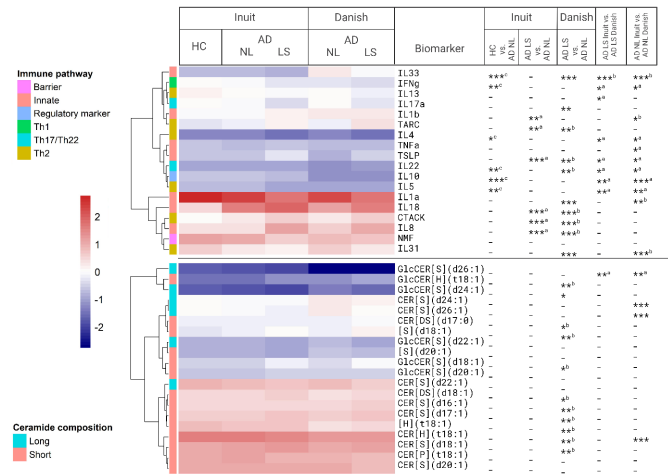


Figure 2_Andersson et al.

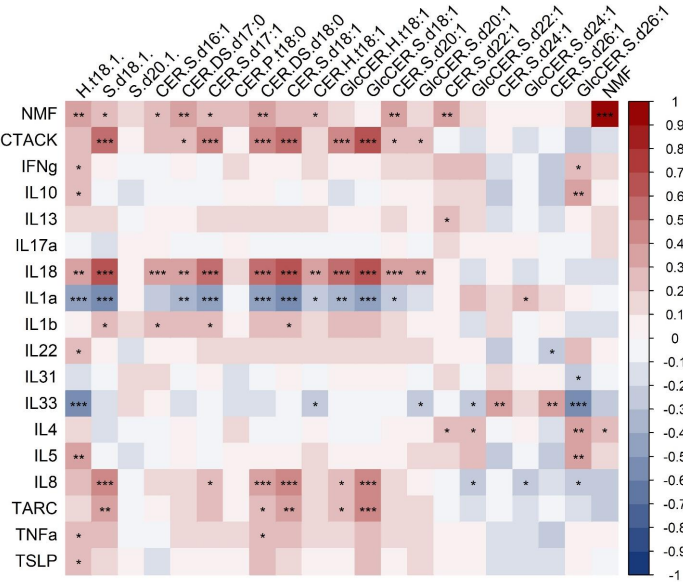


Figure 3_Andersson et al.