Relatedness and disease: Could kinship be influencing disease outcome?

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Summary report: The kinship relationships and its importance on disease outcomes are poorly understood in marine mammal populations. In this project we aimed to determine kinship in hookworm infected South American fur seal pups through 13 species-specific microsatellite markers and evaluate if this could be influencing disease outcome. The funds were used to buy a DNA extraction kit ((E.Z.N.A.®, Omega bio-tek), 13 fluorescent labeled primers (Thermo Fisher Scientific®), 13 reverse primers (IDT Inc.) and a student subscription to Geneious Prime (Biomatters Ltd.) for sample genotyping. The 2019 sampling season was not included in the funds because captures were performed only during February, due to low budget and bad weather, which is past the infection peak and therefore disease association assessment would not be accurate. Instead we included more samples (n=117) from other seasons (2014-2017). We were able to reveal eight full-sibling dyads, six in different seasons and two within the same season (2017) that is the first evidence of genetic twins for the species. No significant differences were evidenced between full-sibling groups in hookworm burden, immune response or infection outcome. These results suggest that kinship would not be influencing hookworm disease, probably since full-siblings only share on average 50% of their genetic material, which could be explaining a higher variability between individuals than between family groups. For this reason, individual and population genetic diversity will be evaluated with hookworm disease associations in the near future. Finally, two papers are being prepared and will be submitted for review within the next month.