



«MOTTAKERNAVN»
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Trondheim, 23.06.2017

Your ref.:
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Our ref. :
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Contact person:
Susanne Hanssen

Participation in panel review of the genetic studies on the Scandinavian grey wolf population

The Norwegian Environment Agency have been tasked with organizing and overseeing an independent investigation into the following two questions:

- What is/are the genetic and biogeographical origin(s) of the present Norwegian/Scandinavian population of grey wolves (*Canis lupus lupus*),
- To what degree can historical and/or present hybridization with domestic dogs (*C. l. familiaris*) be detected in the population?

To assess and evaluate these issues, three reviewers will contribute:

- Prof. Fred W. Allendorf, University of Montana, Missoula,
- Dr. Adam H. Freedman, Harvard university, Cambridge, Massachusetts
- Prof. Robert K. Wayne, University of California, Los Angeles

The participants will review the research that has been conducted and published, evaluating to which extent the existing body of work answers the main questions. The review should also assess the quality of the existing research and the overall result with respect to the technologies available and used at the time, as well as assess the validity of said results given technological and methodological developments and new knowledge.

The Norwegian Environment Agency considers the central studies connected to this work to consist of the peer-reviewed published papers listed below. In addition, several other studies (also peer-review published) directly or indirectly contribute to the present knowledge of Scandinavian wolf population genetics and may be relevant for this review. The supplementary studies listed below may be used as supporting and supplemental information to the central studies, but are not themselves subject for the review. Further, it is up to each reviewer to consider additional studies that may complement the central studies in order to address the main questions of the assignment.

Central studies:

1. Vilà, C., Sundqvist, A.-K., Flagstad, Ø., Seddon, J., Björnerfeldt, S., Kojola, I., Casulli, A., Sand, H., Wabakken, P. & Ellegren, H. (2003). Rescue of a severely bottlenecked wolf (*Canis lupus*) population by a single immigrant. *Proceedings of the Royal Society of London. Series B: Biological Sciences* 270: 91-97
2. Flagstad, Ø., Walker, C. W., Vilà, C., Sundqvist, A.-K., Fernholm, B., Hufthammer, A. K., Wiig, Ø., Koyola, I. and Ellegren, H. (2003). Two centuries of the Scandinavian wolf population: patterns of genetic variability and migration during an era of dramatic decline. *Molecular Ecology*, 12: 869–880
3. Sundqvist, A.-K., Ellegren, H., Olivier, M. and Vilà, C. (2001). Y chromosome haplotyping in Scandinavian wolves (*Canis lupus*) based on microsatellite markers. *Molecular Ecology*, 10: 1959–1966
4. Vila, C., Walker, C., Sundqvist, A.-K., Flagstad, Ø., Andersone, Z., Casulli, A., Kojola, I., Valdmann, H., Halverson, J. & Ellegren, H. (2003). Combined use of maternal, paternal and bi-parental genetic markers for the identification of wolf-dog hybrids. *Heredity* 90: 17-24.

Supplementary studies include, but are not limited to:

- Stronen AV, Jędrzejewska B, Pertoldi C, Demontis D, Randi E, Niedziałkowska M, et al. (2013) North-South Differentiation and a Region of High Diversity in European Wolves (*Canis lupus*). *PLoS ONE* 8(10): e76454
- Stronen, A., Jędrzejewska, B., Pertoldi, C., Demontis, D., Randi, E., Niedziałkowska, M., Borowik, T., Sidorovich, V.E., Kusak, J., Kojola, I., Karamanlidis, A. A. Ozolins, J., Dumenko, V., & Czarnomska, S.D. (2015). Genome-wide analyses suggest parallel selection for universal traits may eclipse local environmental selection in a highly mobile carnivore. *Ecology and Evolution* 5 (19): 2045-7758

The three reviewers decide independently or jointly whether the result of this assignment and investigation will be presented as one common report, one shared/combined report with three statements, or if each reviewer will write an individual report to answer the objectives of the investigation.

The report(s) is to be delivered preferably no later than during 1 September 2017.

The Norwegian Environment Agency shall be notified immediately if the premises necessary for the completion of the assignment (e.g. technical/scientific, economic or related to the assignment's progression) are significantly changed or rendered void.

Terms of payment

The Norwegian Environment Agency will provide remuneration for 40-65 hours of work, depending on number of supplementary studies included. A written report for the review is included in this time estimate. The remuneration is limited to 22 500 NOK (2 650 USD) for each reviewer. The Norwegian Environment Agency will also cover the costs of travel for each participants for one joint meeting among reviewers if deemed necessary by the reviewers.

Each reviewer will bill by invoice the Norwegian Environment Agency for services rendered (max 2650 USD pr participant) and travel expenses documented by copy of travel documents upon delivering the report.

Billing address is by email to susanne.hanssen@miljodir.no.

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Best regards
Norwegian Environment Agency

This document has been signed electronically

Yngve Svarte
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