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Dear Dean of the Faculty,

Here is my review of the PhD thesis of Mgr. Stepanka Slavikova "New findings in Taxonomy and Chemistry of the Genus *Lepraria* (Stereocaulaceae, Lichen-forming fungi)".

Yours sincerely,

Dr. H. J. M. Sipman

It was a pleasure for me to read the thesis of Mrs Slavikova, because it demonstrates a broad interest in the subject, which has lead to unexpected results. She has applied carefully the most modern methods on the taxonomy of the genus *Lepraria*, in particular TLC and DNA analyses, and was able to demonstrate several additional species and considerable range extensions. In addition, she has explored less commonly observed aspects. Here good communicative capacities were demonstrated, because this involved mastering an extended set of techniques, which require good cooperation with specialists in these fields, unfamiliar with the peculiarities of lichens. Notable is also that numerous important specimens for her study were collected by herself in the field, which shows her ability to recognize the microhabitat requirements of these organisms. Moreover she has paid adequate attention to the timely publication of the results, as demonstrated by her considerable list of publications. This list demonstrates also her broad taxonomic knowledge of lichens and a strong dedication to her research field of choice. Consequently the thesis clearly demonstrates that Mrs. Slavikova has fulfilled well the requirements of modern research in this field and has given ample evidence of her capability to work as an independent researcher. Thus she fully merits a PhD degree.

Questions to defendant

1. The newly described species are often characterised by their fatty acid content. The distinction of these substances by TLC was considered unreliable even by experienced lichen chemotaxonomists. What recommendations do you have for a reliable separation?
2. The value of chemical characters for species delimitation is much discussed. What are your arguments to recognize very similar-looking organisms like *L. toensbergiana* as different species?
3. The species as reproductively isolated unit is the basic category in biological systematics. However, the genetic exchange within the unit seems not always as evident as taxonomists might wish, notably in botany. The genus *Lepraria* is an extreme example: a genetic exchange within the species is hardly conceivable, since no generative organs are known. What is your opinion how the uniformity of the species might be maintained? Is the use of species rank justified?
4. In the genus *Cladonia* hyphae present in the substrate, are often indicated as hypothallus. They are sometimes conspicuous by a yellow pigment. Why do you prefer to call a similar structure in *Lepraria* rhizohyphae?
5. A fascinating feature in the genus *Lepraria* is the potential occurrence of mixed thalli. Because most species consist of soredium-like granules only and have a rather similar ecology, it may happen that two thalli grow more or less on the same spot. Have you encountered such cases, and how can they be distinguished from species with a complicated (double) chemistry?

6. SEM observations of surface structures in lichens have been applied mostly to calcium oxalate crystals, and it is very interesting to see how also other substances can be observed. The fine needles on the surface of, e.g., *Cladonia zopfii* are peculiar because they grow while the specimen is stored for several years in the herbarium. Probably they dissolve in water, and thus have no chance to develop in the field. Have you any information about the effect of water on TCR and on any regeneration after dissolving?

7. Gelatinous lichens, like the genus *Collema*, generally lack lichen substances. Thus the observation in *Collema tenax* (Peveling 1973) of thread-like appendages on the surface of hyphae is remarkable. What is your opinion on these structures?