

STudent REseArch Mobility Programme (STREAM) Project proposal



Host University:
Utrecht University

Field:
Natural sciences, mathematics and statistics

Specified field, subject:
Microbiology

Research project title:
Comparative and functional genomics of mushroom development

Possible starting month(s):

Sep	Oct	Nov	Dec	Jan	Fev	Mar	Apr	May	Jun	Jul	Aug
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Possible duration in months:

1	2	3	4	5	6	7	8	9	10	11	12
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Suitable for students in: Bachelor level Master level

Prerequisites:

Depending on your preference the project can be lab/experimental oriented, bioinformatics oriented, or a combination of both.

General prerequisites: molecular genetics, microbiology

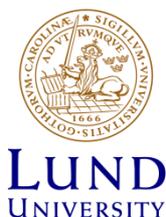
Prerequisites for a lab project: experience with molecular genetics techniques (PCR, gel electrophoresis, or similar).

Prerequisites for a bioinformatics projects: experience with Linux, Python and/or R, or similar.

Description:

Mushrooms are the sexual reproductive structures of basidiomycetes. Much remains to be learned about the molecular regulation of mushroom development. During recent years, the number of mushroom-forming fungi with a sequenced genome has increased dramatically, opening the door to large-scale comparative genomics. Still, only a few genes have been implicated in mushroom development and their exact function remains largely unknown.

Schizophyllum commune is a model system for mushroom-forming fungi. It was recently shown that this species shows high intraspecies DNA variability, yet they can still reproduce sexually. This hypervariability is also illustrated by variability in the response to environmental factors that initiate mushroom development and by the differences in morphology within this species. This project takes a comparative and functional genomics approach to elucidate the molecular genetics of mushroom development. We have a collection of 100 *S. commune* strains sampled world-wide. We leverage the extraordinary diversity among these strains to identify genes that explain differences in mushroom morphology and responses to environmental stimuli.



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Transcription factors (TFs) are expected to play an important role in regulation of mushroom development. Therefore, we systematically study TF function by generating a knock-down collection of all predicted TFs. The phenotypes of the resulting strains will be analyzed and target genes of TFs will be identified. The genes identified by these strategies will subsequently be analyzed to determine their function.



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Faculty and/or Department:

Science Faculty, Department of Biology

Contact person, including position:

Charlotte Brand, coordinator Honours College

Contact email:

honourscollege@uu.nl

Deadline for nomination to reach host university:

ongoing

Notification of admission given by the end of:

Three weeks after application



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