

eLearning Module on Applied Mycology

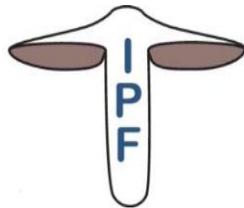
Meike Piepenbring
&
Sascha Pallesch

GOETHE
UNIVERSITÄT
FRANKFURT AM MAIN



Zentrale eLearning-Einrichtung
Goethe-Universität Frankfurt am Main

www.studiumdigitale.uni-frankfurt.de



Integrative
Pilzforschung



LOEWE

Exzellente Forschung für
Hessens Zukunft

Videoaufzeichnungen der IPF-Ringvorlesung



im OSZ H5 oder H6

Zielgruppen:

- Doktoranden/innen im IPF und Folgeprojekten
- Studierende in Mastermodulen
- Weiterbildung zum Fachberater für Mykologie
- internationale Kooperationspartner



Kursaufbau

V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12



3-4 Schnitte pro Video

Kursaufbau:

Einleitung mit Handout → 1. Video → Quizfragen → Bilder → 2. Video → Quizfragen
→ Bilder → 3. Video → Quizfragen → Bilder → Ende



Treasure hunting in fungal diversity

Introduction

About the lesson:

Welcome to the lesson "Treasure hunting in fungal diversity". In this introductory talk of the IPF lecture series, Prof. Piepenbring presents the high diversity of fungi in different systematic groups and their valuable properties for mankind.

The lesson is composed of three video sequences that formed part of one lecture. These sequences are followed by quizzes in which you can make use of what you just learnt. Working through the complete module can probably be done in XXX minutes, but this depends on your individual level of knowledge.

So don't be ashamed if it takes longer - you are here to learn something! Here is a document containing information useful to follow the lecture: (pdf). You might print it as a handout.

About the speaker:

Prof. Dr. Meike Piepenbring is a botanist and mycologist fascinated by biodiversity in the tropics. She lived for several years in Panama and in addition to numerous scientific publications on fungal diversity, new species, and systematic groups, she wrote a textbook on tropical mycology ([link](#)).



Handout

Do you understand this specific English vocabulary?

General biological knowledge being a prerequisite for understanding

Names of important species of fungi with their systematic positions

Those you should know for quiz questions are underlined!

Names of important chemical compounds



Introductory information for the talk by I. Schmitt:

**"The lichen symbiosis:
a rich, but poorly exploited source of natural products"**

Do you understand this specific English vocabulary?

- dye
- hydrophilic
- hydrophobic
- water household

General biological knowledge being a prerequisite for understanding

- apothecium
- Chlorophyta, green algae
- Cyanobacteria, blue-green "algae"
- genome
- HPLC
- metagenomics
- mutualistic symbiosis
- mycobiont
- photobiont
- poikilohydric
- secondary metabolite
- SEM = scanning electron microscopy
- thallus
- transcriptome

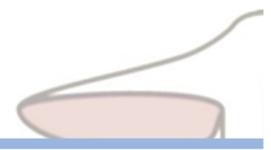
Names of important species of fungi with their systematic positions

Those you should know for quiz questions are underlined!

- *Aspergillus nidulans*, Eurotiales, Ascomycota
- *Aspergillus oryzae*, Eurotiales, Ascomycota
- *Cetraria islandica*, Lecanorales, Ascomycota
- *Cladonia* sp., "British soldiers", Lecanorales, Ascomycota
- *Cryptothecia rubrocincta*, "Christmas lichen", Arthoniales, Ascomycota
- *Evernia prunastri*, "tree moss", Lecanorales, Ascomycota
- *Lasallia pustulata*, Umbilicariales, Ascomycota
- *Lecanora muralis*, Lecanorales, Ascomycota
- *Letharia vulpina*, Lecanorales, Ascomycota
- *Pseudevernia furfuracea*, "oak moss", Lecanorales, Ascomycota
- *Umbilicaria americana*, Umbilicariales, Ascomycota
- *Usnea* sp., Lecanorales, Ascomycota
- *Xanthoria parietina*, Lecanorales, Ascomycota

Names of important chemical compounds

- aflatoxin
- anthraquinones
- chelate
- depsides
- depsidones
- dibenzofurans
- ester
- lichesterol
- orsellinic acid
- polyketide
- pulvinic acid
- shikimic acid
- terpene
- vulpinic acid
- xanthonic acid
- zeorin



Videoteil

☰ Lecture for applied mycology LE 1 1 2 3 4 5 6 7 8 9 10 11 12 13 < >

Treasure hunting in fungal diversity

Chapter 1: Introduction to fungi



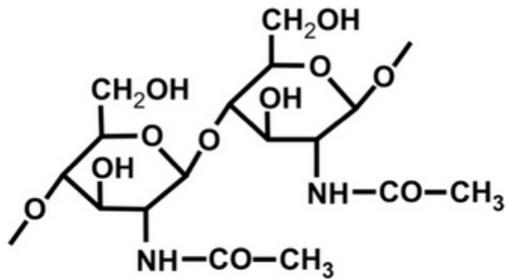
Quizfragen



Treasure hunting in fungal diversity

Chapter 1 - Question 2

Which molecular compounds/structures are present in a fungal cell wall?



This is the main component in a fungal cell wall. Do you recognize it?

1. cellulose

2. chitin

3. glucan

4. glycoprotein

5. mannan

6. phospholipids

7. Spitzenkörper

Antwort prüfen

Lösung anzeigen

Reset

Quizfragen



Treasure hunting in fungal diversity

Chapter 3 - Question 1

1. To which order do species of *Aspergillus* and *Penicillium* belong to?

1. Eurotiales

2. Conidiogenous cells of species of *Aspergillus* and *Penicillium* are called..?

2. phialide

3. Species of *Aspergillus* morphologically differ from species of *Penicillium* by the presence of a...?

3. Vesicle

4. What is the name of the most famous and expensive medicinal fungus that is an entomopathogenic species of the Hypocreales?

4. *Ophiocordyceps sinensis*

Antwort prüfen

Lösung anzeigen

Reset

Feedback:

Congratulations! Exercise solved correctly.

Quizfragen

"The lichen symbiosis: a rich but poorly exploited source of natural products"

Chapter 3 - Question 1

Insert the correct sentence complements below the sentence fragments present in lines 1, 3 and 5.

- 1. Bitter tasting substances are supposed to ...
- ☰ 2. ... protect underlying asci from UV-light.
- 3. Compounds preventing seed germination probably ...
- ☰ 4. ... prevent lichens from being overgrown by plants.
- 5. Pigments covering the layer of asci in apothecia are supposed to ...
- ☰ 6. ...protect lichen thalli against grazing.

Antwort prüfen

Lösung anzeigen

Reset

Feedback:

Points achieved: 0 of 3

Quizfragen - Hintergrund

LernBar Studio 4.2.3 (C:\Users\User\Desktop\VPF\Kurse\Kurs_Splivallo3.lbc)

File Edit Help

Lecture for applied mycology

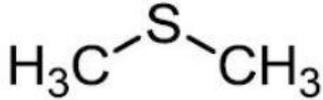
- Fungal volatiles - from their ecological r
 - Abstract
 - Pages
 - Introduction
 - Chapter 1: What are fungal vol
 - Chapter 1 - Question 1
 - Chapter 2: The ecology of fung
 - Chapter 2 - Question 1
 - There are insects in this rotting
 - Chapter 2 - Question 2
 - Chapter 2 - Question 3
 - Chapter 2 - Question 4
 - The plant on the right hand side
 - Chapter 3: Fungal volatiles in in
 - Chapter 3 - Question 1
 - Chapter 3 - Question 2
 - Chapter 3 - Question 3
 - Hyphae of this fungus grow in c
 - Congratulations, you finished "F

Fungal volatiles - from their ecological roles to their industrial applications

Chapter 2 - Question 3

1. The compound shown below forms part of the typical truffle flavour. What is its name?

2. To which genus do commercially appreciated truffles belong to?



1. Dimethyl sulfide; Dimethylst

Scores: Feedback:

2. Tuber; tuber

Scores: Feedback:

+ Hinzufügen

Check answer Show solution Reset

Studio Page: 8

Erholung



Treasure hunting in fungal diversity

You can eat these galls when they are young (completely white)!



Ustilago maydis

Datei Start Einfügen Seitenlayout Formeln Daten Überprüfen Ansicht

Calibri 12 A⁺ A⁻ Zeilenumbruch Standard Bedingte Formatierung Als Tabelle formatieren Zellenformatvorlagen

F K U Schriftart Ausrichtung Verbinden und zentrieren Zahl

P19 f_x

Status des IPF eLearning Moduls

Name	Videos korrigiert	Videos geschnitten	1. Version Sascha	Kommentiert Meike	2. Version Sascha	Kommentiert Meike	Lernbar-kurs online	Begleit-zettel	Lernbar-kurs überprüft Meike	Lernbar-kurs an Spezialist geschickt	Lernbar-kurs überprüft Spezialist	Englisch Kontrolle
Bode	X	X	X	X	X	X	X	X	X	X		
Boles	X	X	X	X	X	X	X	X	X	X		
Bölker	X	X	X	X	X	X	X	X	X	X		
Hoffmeister	X	X	X	X	X	X		X				
Kirschner	X	X	X	X	X	X	X	X	X	X	X	
Kost	X	X	X	X	X	X	X	X	X			
Langer	X	X	X	X	X	X	X	X	X	X		
Piepenbring	X	X	X	X	X	X	X	X	X	X	X	
Rühl	X	X	X	X	X	X	X	X	X	X		
Schmitt	X	X	X	X	X	X	X	X	X	X		
Splivallo	X	X	X	X	X	X	X	X	X	X		
Thines			X	X								

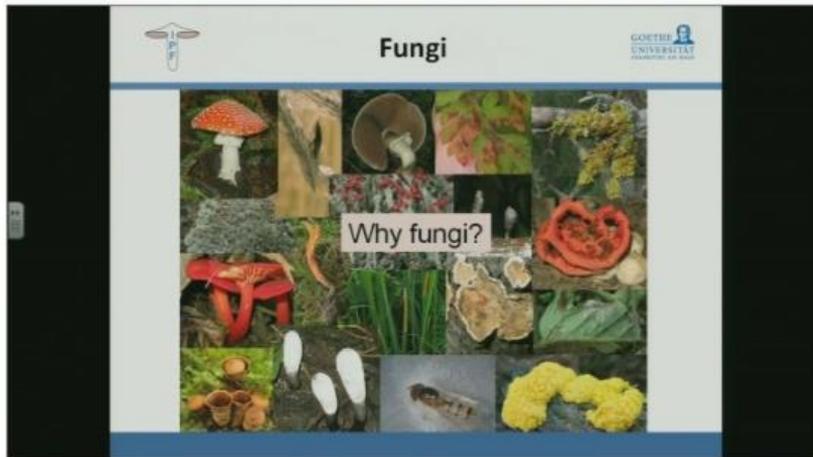
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Verbesserungsmöglichkeiten: größer!

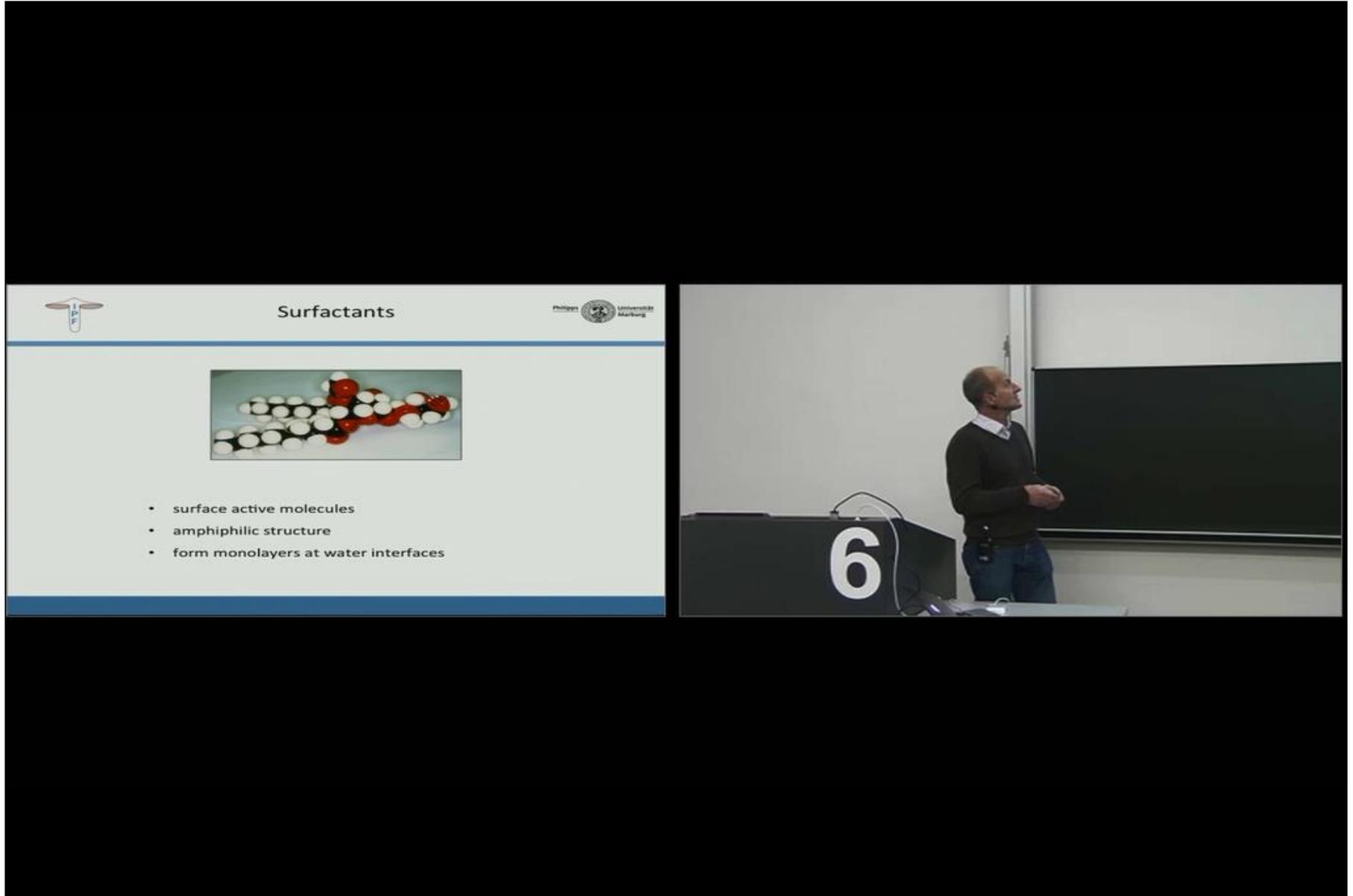


Treasure hunting in fungal diversity

Chapter 1: Introduction to fungi



Verbesserungsmöglichkeiten: korrekte Orientierung



Surfactants

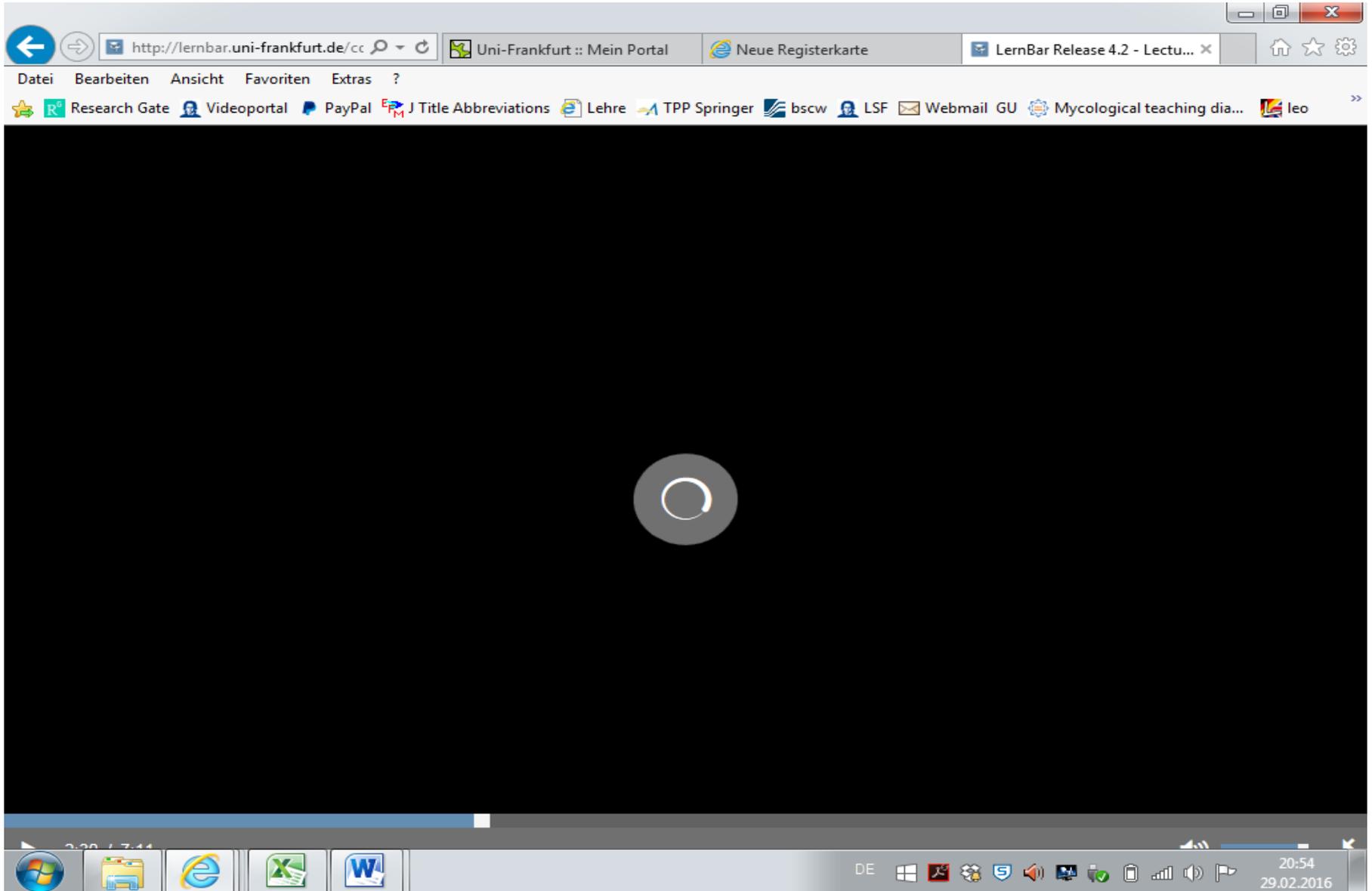
Philipps-Universität
Marburg



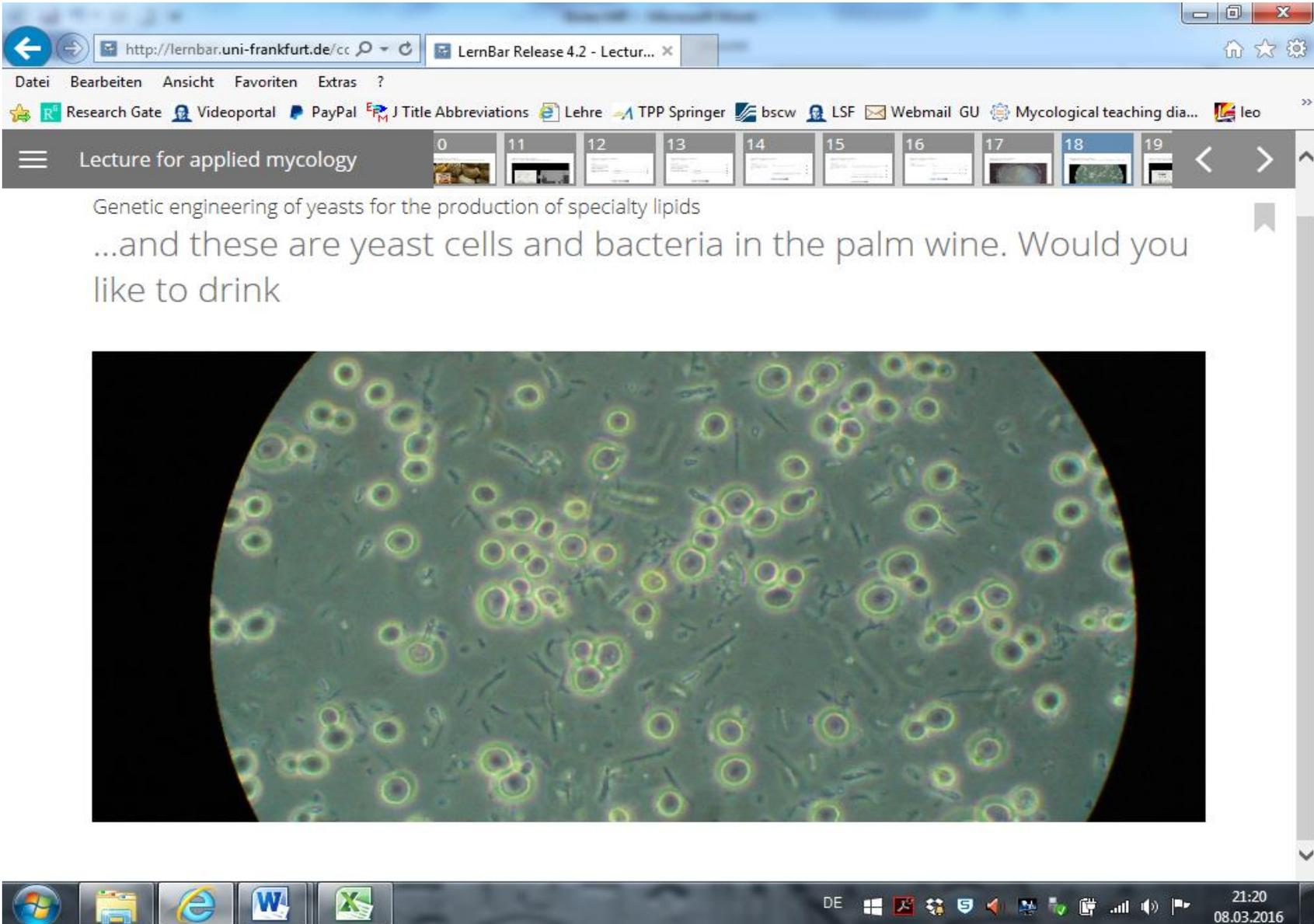
- surface active molecules
- amphiphilic structure
- form monolayers at water interfaces

6

Verbesserungsmöglichkeiten: Technik



Verbesserungsmöglichkeiten: Aspekte des Programms lernbar



The screenshot shows a web browser window with the address bar displaying <http://lernbar.uni-frankfurt.de/cc>. The browser's menu bar includes 'Datei', 'Bearbeiten', 'Ansicht', 'Favoriten', and 'Extras'. The address bar shows the current page is 'LernBar Release 4.2 - Lector...'. The browser's toolbar contains various icons for Research Gate, Videportal, PayPal, J Title Abbreviations, Lehre, TPP Springer, bscw, LSF, Webmail GU, Mycological teaching dia..., and leo.

The main content area displays a slide titled 'Lecture for applied mycology'. The slide content includes the text: 'Genetic engineering of yeasts for the production of specialty lipids ...and these are yeast cells and bacteria in the palm wine. Would you like to drink'. Below the text is a circular image showing a microscopic view of numerous yeast cells and bacteria, appearing as small, round, greenish-yellow structures with dark centers, set against a dark background.

The Windows taskbar at the bottom shows the system tray with the date '08.03.2016' and time '21:20'. The taskbar also displays icons for Internet Explorer, Microsoft Word, and Microsoft Excel.

Verbesserungsmöglichkeiten: Aspekte des Programms lernbar

http://lernbar.uni-frankfurt.de/cc

LernBar Release 4.2 - Lectur...

Datei Bearbeiten Ansicht Favoriten Extras ?

Research Gate Videoportal PayPal J Title Abbreviations Lehre TPP Springer bscw LSF Webmail GU Mycological teaching dia... leo

Lecture for applied mycology

Genetic engineering of yeasts for the production of specialty lipids
Chapter 4 - Question 1

Select the correct answers!

1. What is the name of the compound shown in the picture?

etra-acetyl-phytosphingosin, tetra-keto-phytosphingosin

2. What is the name of the yeast producing it?

Pichia ciferrii, Saccharomyces cerevisiae, Wickerhamomyces ciferrii

3. What is the compound good for?

detergent for washing powder, healthy food additive, improves properties of human skin

1. etra-acetyl-phytosphingosin

2. Pichia ciferrii

3. human skin

Check answer Show solution Reset

Feedback:
Points achieved: 0 of 3

DE 21:27 08.03.2016

Probleme bei der Umsetzung

- Fragenideen häufig nicht umsetzbar in Lernbar wegen...
 - ... Textbegrenzung
 - ... Änderung der Abfrageformate

→ Besser: Fragen direkt in Lernbar Studio entwickeln
- Technische Probleme in Lernbar Studio
 - Abspeichern der Inhalt funktioniert nicht zuverlässig
 - Schrift kann nicht manuell formatiert werden (kein Copy & Paste!)
 - Kursiv-Formatierung fehlt für wissenschaftliche Namen
- Umformatieren der Aufzeichnungen in lernbar-kompatibles Format
- Datenübermittlung zwischen HRZ und Studium Digitale dauert sehr lang
- Zugang zu den Lernbar-Dateien funktioniert gar nicht oder die Videos werden nur sehr langsam geladen (bleiben hängen)
- Herausforderung: Inverted Classroom (erste Versuche im WS 2015/16)





Vielen Dank für Ihre
Aufmerksamkeit!