CZECH REPUBLIC

University: **UNIVERSITY OF SOUTH BOHEMIA IN ČESKÉ BUDĚJOVICE**
Faculty: **Faculty of Science**

Academic Year: **2022/2023**
Personal Number: **B20001**

A RECORD

of the Final State Examination

First name, surname, degree: **Ana-Marija ANDOVA, Bc., BSc**

Date of birth: **July 7, 1997**
Place of birth: **Kochani**

Degree programme: **N0512A130012 - Biological Chemistry**

Master's thesis title: **Characterization of pore opening relevant residues in TM3 and TM4 domains of Orai1**

Master's thesis supervisor: **Dr. Isabella Derler**

Master's thesis assigned on: **May 13, 2022**

Attachments are (cross out non-applicable): 1. Assignment of Master's thesis
2. Supervisor´s statement of the thesis
3. Opponent´s review of the thesis

19.12.2022

Name: Ana-Marija ANDOVA, Bc., BSc

Personal number: B20001

Course of the defence:

① Introduction to the thesis: Ion channels - basic properties/characters; ligand binding, voltage gated, location in the membranes

1/ Voltage-gated ion ch.

2/ Ligand-gated/receptor operated

Ca^{2-} signaling > explained a role of Ca^{2+} ions and

CRAC channels : STIM 1 + Orai 1 → associated with CRAC channel

↑ in plasma membrane

→ in ER membrane

(Orai 2; 3

STIM 1; 2
Ca^{2+} sensing

transmembrane segments and their differences
4× across membrane of CRAC channel

GOF - gain of function

LOF - loss of function ← in SCID strain of mice

Main focus on TM3-TM4 domain

Point mutation (site mutation) used to study structure & function specificity of the proteins

- Patch-clamp: Activation of store-operated Orai 1 channels
- Ana-Marija prepared recombinant Orai 1 a studied their functional features in electrochemical assays, a role of Trp, Lys in physical-chemical features

Single and double mutations
Critical pair of residues 1
located opposite

Score: ....

Assessment: VERY GOOD (=2)

Date of defence: 19/12/2022

Questions: LG: Posttranslational modification of Orai 1

Prof. Isabella Derler: protein expression, ribosomes; Ca^{2+} entry

Name: Ana-Marija ANDOVA, Bc., BSc

Personal number: B20001

Exam of the subject: **Advanced Biology and Biochemistry** Prof. LIBOR GRUBHOFFER

Exam's Course: (1) Biological membranes: differences between animal, plant, bacteria, glycerolphospholipid, sphingolipids; proteins; (2) Transport mechanisms: simple difusion
(3) Primary active transporter: Na^+K^+ ATPase
(4) Gene cloning: restriction enzyme, methodology
(5) PCR - principles
CRISPR - principles | (6) Glutathion

Assessment: ....

Date: 19/12/2022 Discussion: L. Grubhoffer: Postran[...] modification of ovary, glycosylation,

Score: .... Prof. Isabelle Derler: Expression of proteins, ribosomes, tRNA, Phosphorylation

Prof. ISABELLA DERLER

Comittee Chairperson's signature

Exam of the subject: **Fundamentals of Chemistry and Technology for Biological Chemists** PROF MARIO WASER

Exam's Course:

1/ Amino Acids: structures, function; Chirality
L-diastereoisomers (monosaccharides - D mostly nature)
AA ionic forms depends on pH (acidic, basic area)
isoelectric point
2/ Peptide bond
3/ Decoupling
4/ Difference between ALDOSE & KETOSE?
Examples of prominent
Ketose - Fru; Aldose - Rib; Glu

Assessment: ....

Date: 19/12/2022

Score: ....

Exam of the subject: **General Chemistry** PROF. SABINE HILD

Exam's Course:

1/ What molecules make biological membranes
double layer membrane, phospholipids, amphipatic molecules
Micelles: condition to create it; surface tension,
H-bonds vs van der Waals bonds
↳ stronger than ↗

Assessment: ....

Date: 19/12/2022

Score: ....

Name: Ana-Marija ANDOVA, Bc., BSc | Personal number: B20001

Assessment of the final state examination:

Master's thesis state examination — date 19/12/22 — assessment ~~Good~~ Very (2)

Final State Examination Subjects:

Advanced Biology and Biochemistry — date 19/12/22 — assessment ~~good~~ Very (2)

Fundamentals of Chemistry and Technology for Biological Chemists — date 19/12/22 — assessment ~~very good~~ Very good (2)

General Chemistry — date 19/12/22 — assessment ~~very good~~ Very good (2)

Overall assessment of the final state exam:

Overall study result:

In accordance with Act No. 111/1998 Coll., on Higher Education Institutions and on Alterations and Amendments to other Acts (Higher Education Act), the student has succesfully completed higher education in

Degree programme: **N0512A130012 - Biological Chemistry**

In České Budějovice, on ~~In Linz on~~ 19/12/2022

Examination board members:

Prof. ISABELLA DERLER

Prof. MARIO WASER

Prof. LIBOR GRUBHOFFER

~~Prof. MARCUS HIMMELSBACH~~

Prof. SABINE HILD

Prof.

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