



CNaPPES.21

7º Congresso Nacional de Práticas Pedagógicas
no Ensino Superior

Trabalho colaborativo em iniciação à investigação em Biologia

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³International Iberian Nanotechnology Laboratory (INL)



Escola de Ciências da Universidade do Minho
Departamento de Biologia



INTERNATIONAL IBERIAN
NANOTECHNOLOGY
LABORATORY

Biologia Aplicada (BA)



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Plano de Estudos

2021/2022

Nos cursos que incluem opções, anualmente, são indicadas as unidades curriculares opcionais a disponibilizar, bem como as respetivas condições de inscrição e número de vagas.

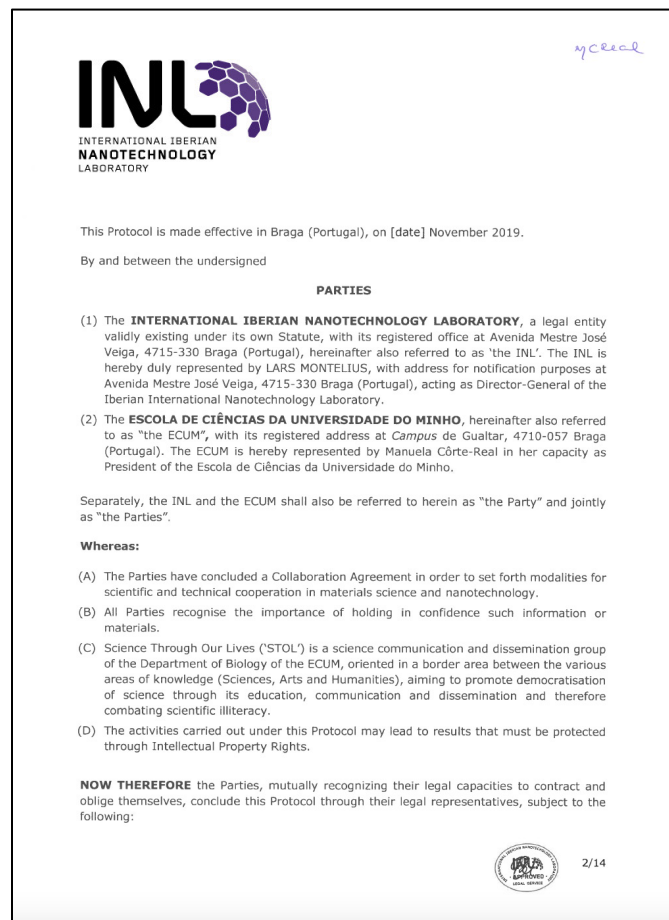
| Regime | Unidade Curricular | Área Cient. | ECTS |
|--------------|---------------------------------|-------------|-----------|
| Ano 1 | | | 60 |
| S1 | Biologia Celular | BIO | 6 |
| S1 | Hereditariedade e Evolução | BIO | 6 |
| S1 | Laboratórios de Biologia | BIO | 6 |
| S1 | Química Geral | QUI | 6 |
| S1 | Tópicos de Matemática EC | M | 6 |
| S2 | Bioquímica | BIO | 6 |
| S2 | Botânica | BIO | 6 |
| S2 | Estatística EC | M | 6 |
| S2 | Fundamentos de Química Orgânica | QUI | 6 |
| S2 | Microbiologia | BIO | 6 |

Protocolo INL / ECUM (nov.2019)



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Work Programme

Project team roles and responsibilities

Work Programme

The present working programme will be applied to students of the Biology Laboratories (BL) curricular unit (CU). The programme starts on the 16th of October 2019 within a full semester. The programme will involve innovative learning methodologies, implementing the mission and vision of the Mission NERD (Nanotechnology Education and Research Demonstrations) project.

The phases envisaged for the work programme are listed below.

Phase 1

Provide a list of concepts to stimulate students in STEM education. The concepts will be in the scope of nanotechnology and biology, or other related topics.

For conceptual understanding, and team work building, the students will be divided in teams of 3-4 elements. They will design a strategy to decode science based on a:

simple experiment (hands-on);

digital narrative (communicating science);

pitch talk to the general public (the “art” of communication) following the vision of Mission NERD project.

Phase 2

Hands-on (laboratory work, implementation of an experiment based on recycling material, if possible.)

Phase 3

Digital narrative (3 minutes video)

Phase 4

Pitch talk and local engagement or experience (development of an inclusive description and methodology to engage general public). The students will identify a partner to present their concept to Mission NERD partners.

Mission NERD

Innovative learning culture



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Who?



Estudantes



Cientistas

Professores



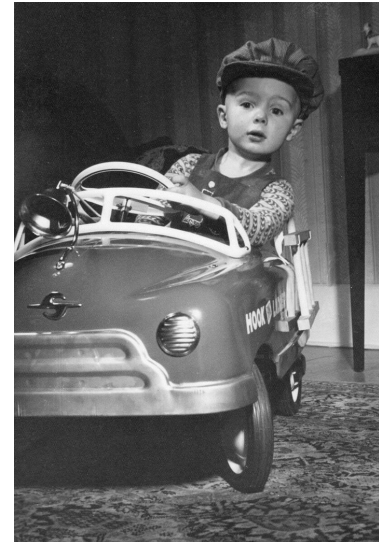
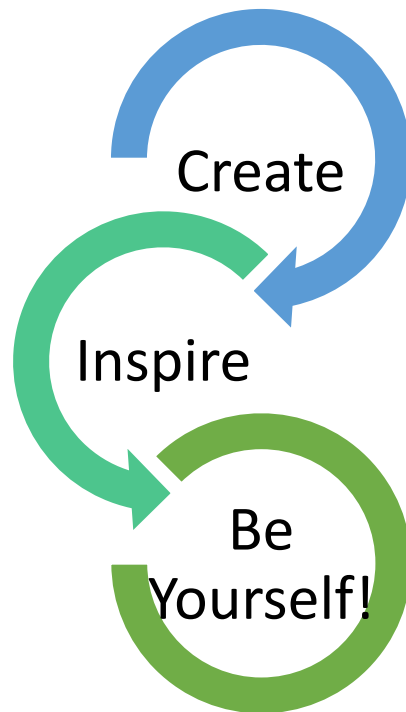
Transforming the complexity



Mission NERD

Innovative learning culture

How?



**The learning experience
from your memories!**



Be inspired by your imagination!

Cognitive intelligence (IQ) + Emotional intelligence (EQ) = Excellent Team Work



Mural Virtual



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padlet

Isabel AP Mina + 64 9mo

Laboratórios de Biologia (LB)

Mural de Aprendizagem - Licenciatura (C1) em Biologia Aplicada (BA), 1.º ano

REMAKE SHARE

Atividades e Tarefas

Apresentação dos alunos

Para se apresentar responda ao questionário que se segue...

Unidade Curricular (UC) de Laboratórios de Biologia (LB) - 2019/20

Apresentação do aluno - questionário pa... google docs

Nome completo e número do aluno *

Local e data de nascimento *

PL4.1

Equipa

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PL4.2

Equipa

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PL4.4

Equipa

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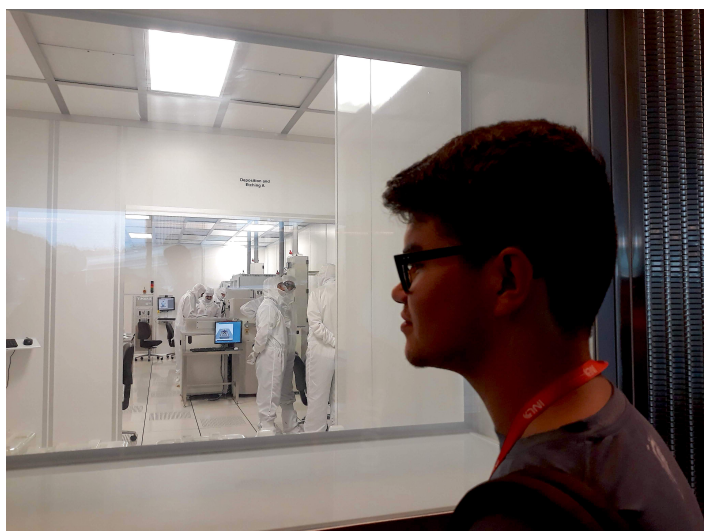
TP01 Equipas - trabalho colaborativo

Elaboração de um mapa mental para registo das características fundamentais das equipas e competências e funções dos seus membros

Mapa mental TP01: Equipa

Mapa Mental: Equipa

Mapa mental PL01: Laboratório



Alunos de Laboratórios de Biologia (2019 20)
16 & 17 outubro 2019

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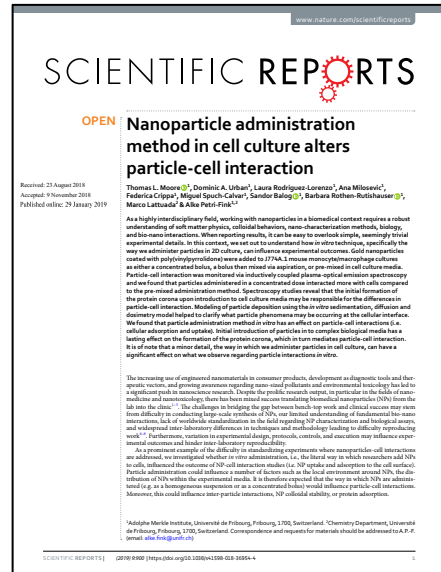
Analyst

PAPER

View Article Online
www.rsc.org/journal/ANALYST

Rapid and specific detection of cell-derived microvesicles using a magnetoresistive biochip†

Chen-Hsin Yang, 2017, 142, 570



g of droplets and surface
of sensors using gold-patterned
multiplexing in biochips†

T. M. Dias,^a E. Fernandes,^d S. Cardoso,^{cd} G. Monteiro^{bc} and P. P. Freitas^{ad}

Received 31st May 2017
Accepted 1st September 2017
DOI: 10.1039/c7ra06085h
rsc.li/rsc-advances

1. Introduction

regions/samples which is, in general, associated with lower costs.^{5,6}

Because of these advantages, miniaturized POC systems are gaining increased interest in applications where time is critical, for instance, in the emergent triage of imminent diseases (e.g. heart attacks)⁷ regions where laboratory facilities are nonexistent and resources are low (e.g., developing countries)⁸ or as a methodology for analysis of multifactorial diseases such as cancer for rapid treatment decision.⁹ In most of complex diseases, the diagnosis of a single biomarker does not provide a definitive diagnostic and multiplexing approaches are required.¹

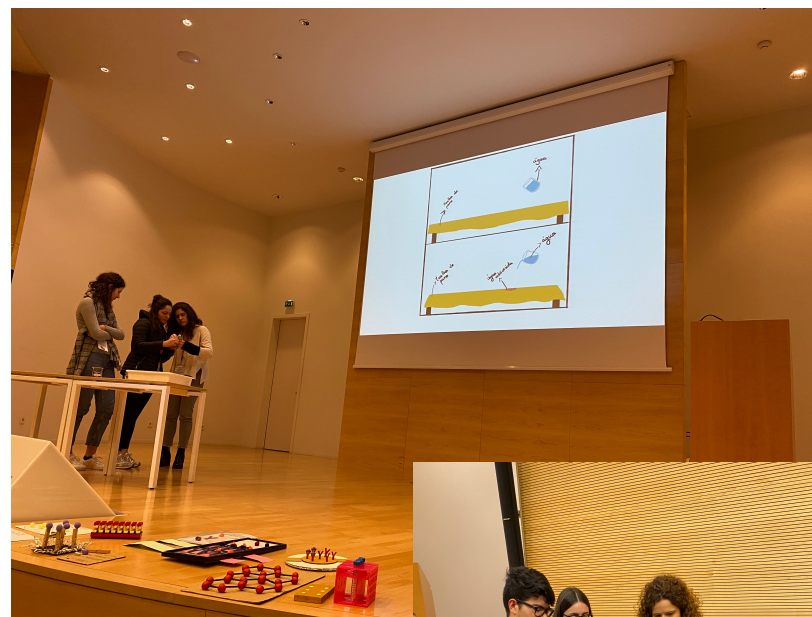
Several bio-sensing technologies can be adapted for this purpose and many formats are available. Although some exceptions exist, most of the sensor methodologies are broadly classified into label-based and label-free. In our group, we research the potential implementation of magnetoresistive (MR) sensors in bio-sensing applications. MR sensors detect target entities when attached to magnetic nanoparticles (MNP) and are included in the classification of label-based systems.⁴ When compared to traditional label-based technologies, usually employing optical labels (e.g. colorimetric, fluorescent or

Apresentação dos Projetos



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15 janeiro 2020



Laboratórios de Biologia 2020/21

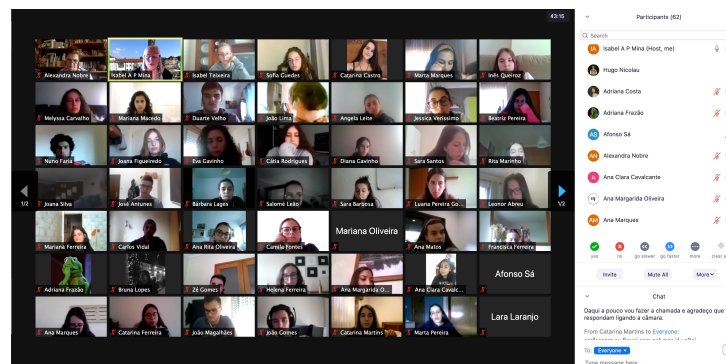
Aulas T



Aulas TP & PL



Aulas PL



Visita virtual ao



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Zoom Meeting

PL5.1 Mariana... PL6.1 Helena... PL3.2 João Pedro... PL5.1 Angela Leite

01:24:09

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LABORATORY

MISSION **WORLD**
Nanotechnology Education and Research Demonstrations

Social Solidarity Team | *Life's better when we feel the spirit of sharing* ©

Elisabete Fernandes
October 16th, 2019
Portugal

A banner for the 'MISSION WORLD' project. It features the INL logo at the top left. The main text reads 'MISSION WORLD' in large, bold letters, with a stylized atom symbol between 'MISSION' and 'WORLD'. Below this, it says 'Nanotechnology Education and Research Demonstrations'. A tagline 'Social Solidarity Team | Life's better when we feel the spirit of sharing' is followed by a copyright symbol. The name 'Elisabete Fernandes' and the date 'October 16th, 2019' and location 'Portugal' are listed at the bottom. The banner is decorated with a filmstrip border containing various images of people working in a laboratory setting.

Participants (61)

Search

- IA Isabel A P Mina (Host, me)
- e elisabete.fernandes@in... (Co-host)
- Mariam Debs
- AN Alexandra Nobre

You are screen sharing 01:11:46 Stop Share

Nanotechnology is the study and application of science,

A video feed showing a laboratory scene. A female scientist in a white lab coat and blue gloves is using a pipette to transfer liquid into small vials. The background shows laboratory equipment, including a rack of vials and various tubes and containers.

Isabel A P Mina
PL4.1 Inês Queiroz
PL3.2 João Pedro Duarte M...
elisabete.fernandes@inl.int
Mariam Debs

Mural de aprendizagem



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padlet

Isabel AP Mina + 46 5mo

Unidade Curricular (UC) Laboratórios de Biologia (LB)

Mural de Aprendizagem - Licenciatura (C1) em Biologia Aplicada (BA), 1.º ano (2020/21)

Informações

Isabel AP Mina 9mo

Metodologia de Ensino Aprendizagem

Realização de um Projeto em equipa para estimular competências técnicas e sociais

Add comment

Roteiro da UC

Isabel AP Mina 9mo

Apresentação dos estudantes

Unidade Curricular (UC) de Laboratórios ...
Apresentação do aluno
google docs

Add comment

Equipa PL1.1

Quem Tem Medo do Lobo Mau
PDF document
padlet drive

1 comment

Isabel AP Mina 6mo

Parabéns! A vossa história está muito gira, mas precisa de correções, nomeadamente no que escreveram sobre nomes científicos! *Canis lupus signatus* é o nome de uma sub-espécie!

Add comment

Equipa PL1.2

Isabel AP Mina 7mo

A vossa drive está vazia...

Add comment

Anonymous 7mo

Infografia PL1.2

Uma pequena viagem pelo laboratório

Infografia
Powerpoint presentation
padlet drive

Add comment

Equipa PL2.1

Ana Rita Teixeira 8mo

Mapa mental: "Equipa"

Mapa mental realizado pelas alunas Ana Rita Oliveira, Catarina Castro, Beatriz Pereira e Beatriz Rebelo.

2 comments

Isabel AP Mina 8mo

Muito bem... mas o vosso mapa mental precisa de reorganização. Tendem agrupar as palavras chave que dizem respeito a um mesmo

Salas virtuais



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The screenshot displays a virtual meeting interface with a grid of participant thumbnails on the left, a list of breakout rooms in the center, and a detailed view of a specific breakout room on the right.

Participant Grid (Left):

- Row 1: PL2.1 Ana Rita Oliveira, Isabel A P Mina, PL6.1 Daniela Pereira, PL6.1 Sara Barbosa, PL6.2 Luana Gomes
- Row 2: PL6.2 Márcia Rodrigues, PL 2.1 André Lima, PL4.1 Mariana Macedo, PL4.1 Inês Queiroz A95832, PL2.1 Catarina Castro A94547
- Row 3: PL4.1 Joana Silva, PL4.1 Catarina Martins, PL6.1 Marta Marques, PL6.2 Mariana Oliveira, PL6.1 Helena Ferreira
- Row 4: PL2.1 Beatriz Pereira, PL6.1 Sofia Gonçalves, PL2.1 Beatriz Belo, PL2.2 Camila Fontes, PL2.2 Bárbara Lages
- Row 5: PL4.2 Carlos Pinheiro, PL4.2 Eva Gavinho, PL2.2 Bruna Lopes, PL2.2 Catarina Ferreira, Guilherme Vieira

Breakout Rooms - In Progress (Center):

- Room 1 (5 participants):**
 - PL 2.1 André Lima
 - PL2.1 Ana Rita Oliveira
 - PL2.1 Beatriz Belo
 - PL2.1 Beatriz Pereira
 - PL2.1 Catarina Castro A94547
- Room 2 (6 participants):**
 - PL2.2 Ana Margarida Machado Ribeiro
 - PL2.2 Bárbara Lages
 - PL2.2 Bruna Lopes
 - PL2.2 Catarina Ferreira
 - PL2.2 João Gomes
 - PL2.2 Camila Fontes (not joined)
- Room 3 (5 participants):**
 - PL4.1 Catarina Martins
 - PL4.1 Guilherme Vieira
 - PL4.1 Inês Queiroz A95832
 - PL4.1 Joana Silva
 - PL4.1 Mariana Macedo
- Room 4 (4 participants):**
 - PL4.2 Carlos Pinheiro
 - PL4.2 Eva Gavinho
 - PL4.2 Bruna Gomes (not joined)
 - PL4.2 Leonor Abreu (not joined)

Breakout Room Detail (Right):

The detail view shows a participant in a red shirt. The participant list on the right includes:

- Isabel A P Mina (Host, mod)
- PL 1.1 Ana Clara Cavalcante
- PL 1.1 Catarina Rodrigues
- PL 1.1 Francisca Ferreira
- PL 1.1 Melyssa Carvalho
- PL 1.1 Marina Souza
- PL 1.1 Ana Margarida Oliveira

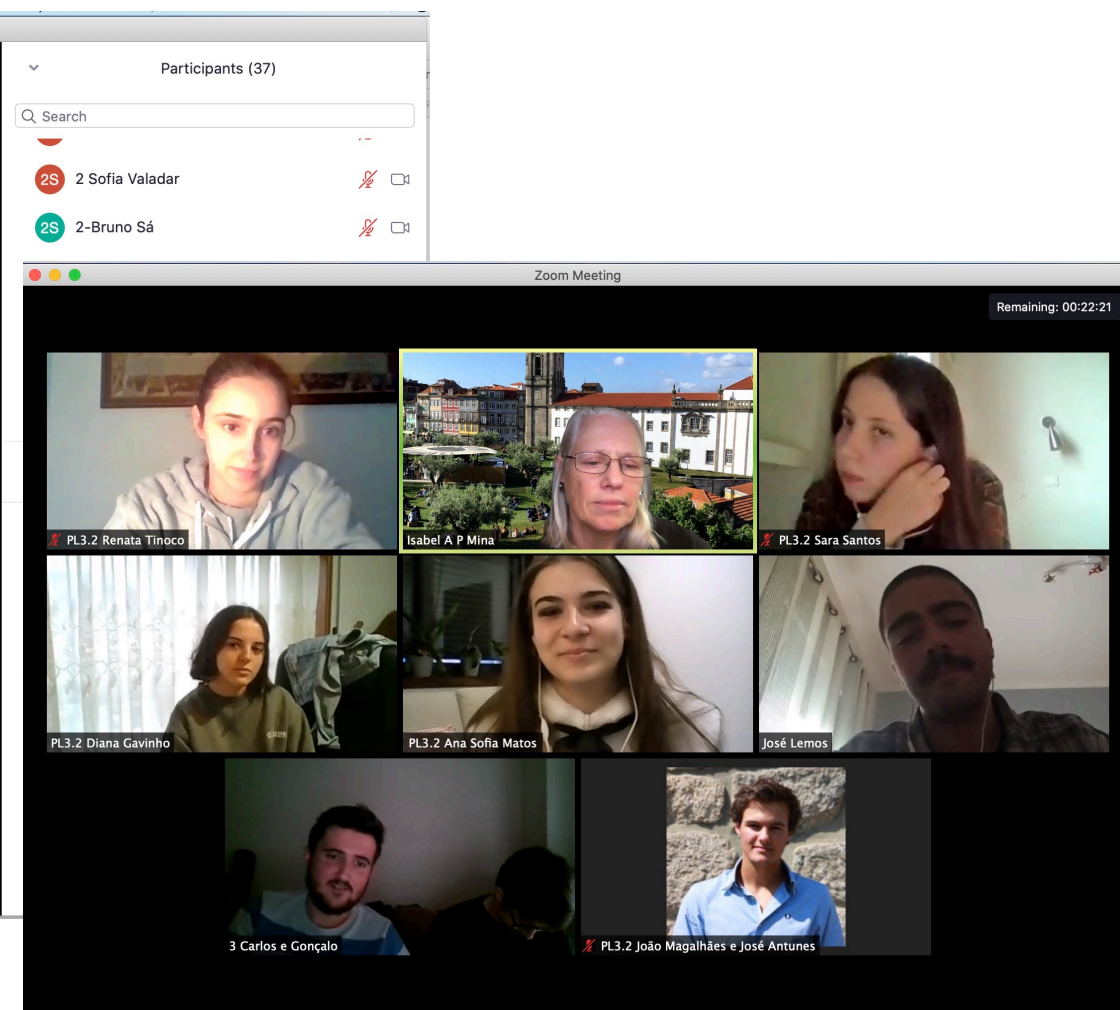
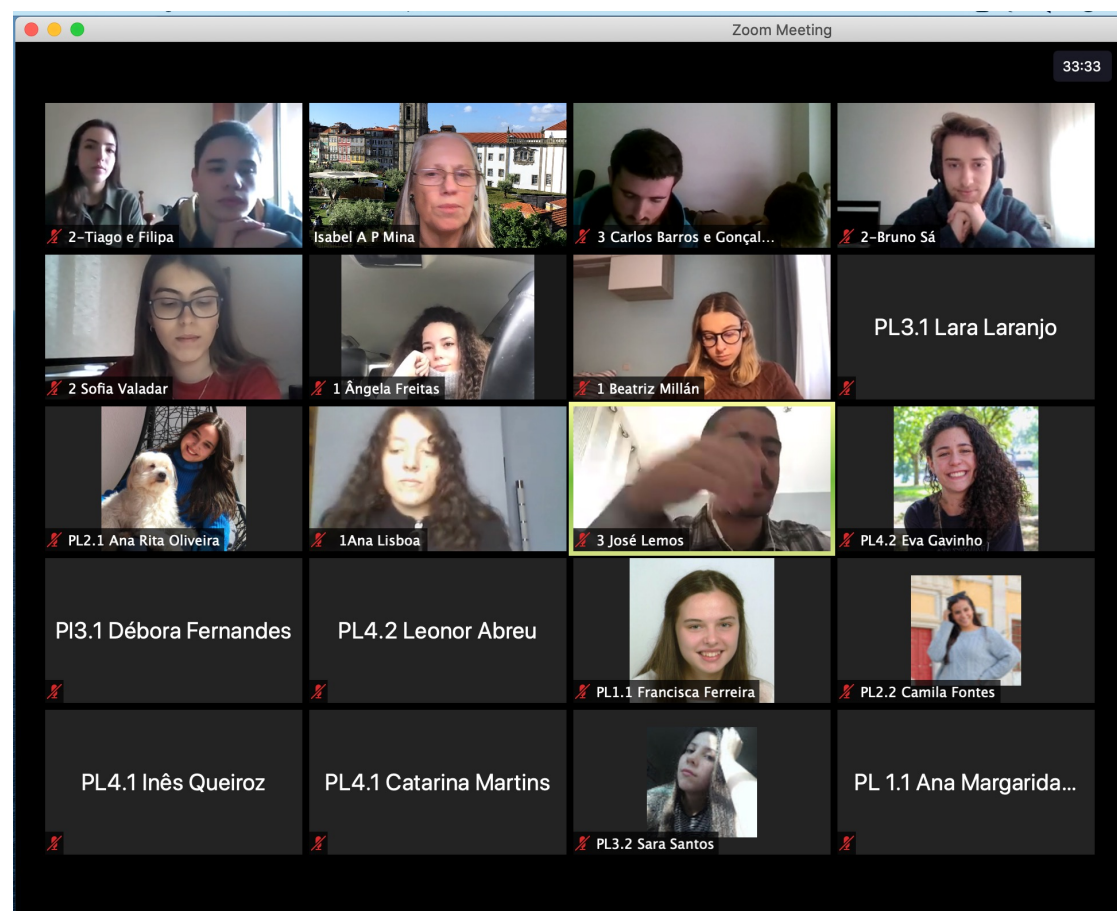
Buttons at the bottom: Broadcast Message to All, Close All Rooms.

“Tutoria” dos colegas do 2.º ano



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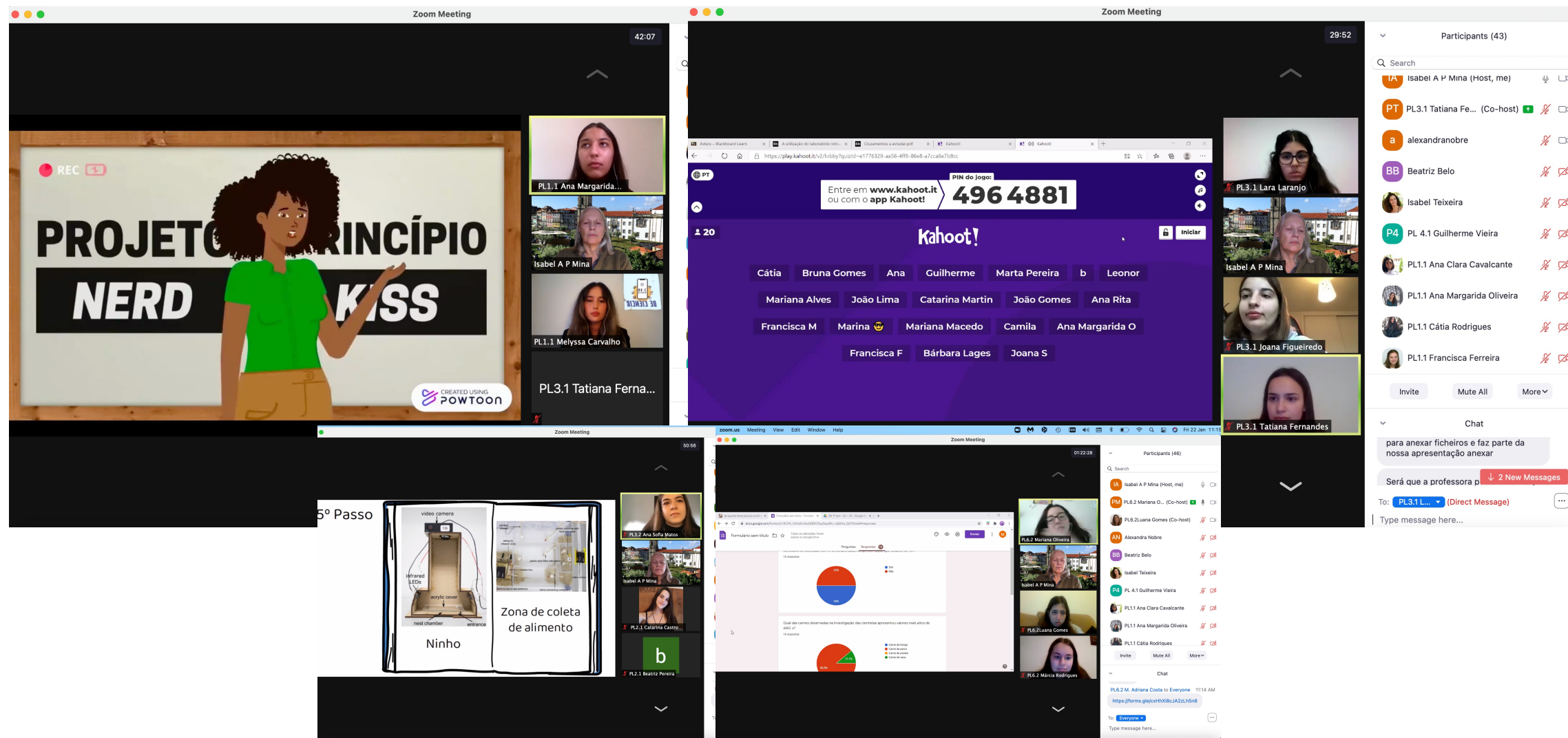


Apresentação dos Projetos online



▶ CNaPPES.21

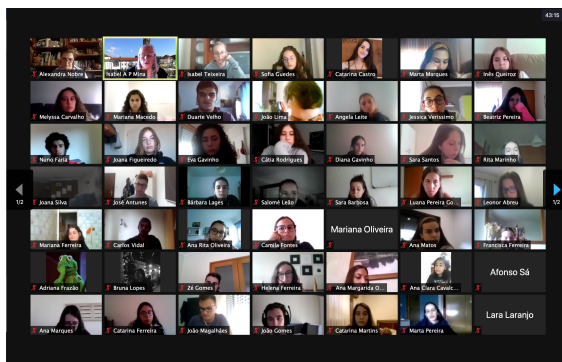
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Obrigada pela
vossa atenção!

icapmina@bio.uminho.pt



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Departamento de Biologia

