KU LEUVEN

Demonstration of innovative tools

Media & Learning conference - Back to the Future?
Provinciehuis Leuven
Tula Verhalle
20 June 2024

Project Consortium – 5 different partners universities

Medical University of Lublin, Poland (coordinator)
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KU Leuven, Belgium
An Zwijsen

University Of Oslo, Norway
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Reykjavik University, Island
Olafur E. Sigurjónsson

University of Foggia, Italy
Claudia Picolli and Consiglia Parcelli

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Challenges

- Creating more activating videos
- Maximize remote preparation of students and improve learning
- Experimental thinking also for students without lab access
- Encourage active participation by demystifying practical manipulations
- Coping with the continuously increasing student numbers and costs
- Methods to evaluate student progress in this environment

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Objectives of the project

To develop educational solutions for students with limited access to laboratory infrastructure

To promote transfer of knowledge using digitally enhanced strategies

To create standardized educational materials

To facilitate educational innovation

To reach out to external stakeholders

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What is it all about?

- Virtual lab training for Biomedical science students
- Using an e-learning platform
- Developing a workshop training program
  - Encouraging active thinking and brainstorming
  - Developing a scientific mindset
  - Including self assessment
- Creating
  - A glossary of biomedical terms
  - Student protocols (SOPs)
  - Teacher's guides

Consortium → Harmonize the quality and format across 5 partners

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Virtual lab training for biomedical science students

WETLAB TRAINING VIDEOS

- 30 modules
- JoVE-style scripts
- Voice over
- Subtitles

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30 Different modules

MUL

- **M1**-Zebrafish staging (with UiO)
- **M2**-Zebrafish injecting Tol2
- **M3**-Zebrafish injecting CRISPR-Cas9, Morpholino
- **M4**-Zebrafish small compound screen (with UiO)
- **M5**-Zebrafish behavioral studies (with UiO)
- **M6**-Zebrafish human cancer cells injection

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- **M1**-Chicken embryo staging
- **M2**-Chicken embryo "inking"
- **M3**-Chicken embryo "lifting"
- **M4**- Mouse gastrulation (dissection, staging, EMT process)
- **M5**-Chicken embryo "beading" (gain-of-function study)
- **M6**-Concepts of phenotypic analysis of mouse embryos
- **M7**- Chorio-allantoic membrane (CAM) assay
- **M8**-Concepts of gene activity using reporter mouse lines

UiO

- **M1**- Zebrafish husbandry & developmental staging (with MUL)
- **M2**- Zebrafish whole-mount in situ hybridization (with KU Leuven)
- **M3**- Toxicological assessment of drugs and compounds
- **M4**- Zebrafish behavioral studies (with MUL)
- **M5**-Human tumor cell xenografting in larval zebrafish
- **M6**- Zebrafish small compound screen (with MUL)

RU

- **M1**- Lypholyzed platelet lysate manufacturing for MSC differentiation
- **M2**- Osteogenic differentiation from MSC and Alizarin red staining
- **M3**- Chondrogenic differentiation from MSC and GAG staining

UNIFG

- **M1**- polarographic methods part 1
- **M2**- polarographic methods part 2
- **M3**- extracellular flux analysis techniques part 1
- **M4**- extracellular flux analysis techniques part 2
- **M5**- mitochondrial morphofunctional analysis by confocal microscopy
- **M6**- preanalytical mass spectrometry
- **M7**- mass spectrometry in metabolomics

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Explantation of a chicken embryo "Lifting"

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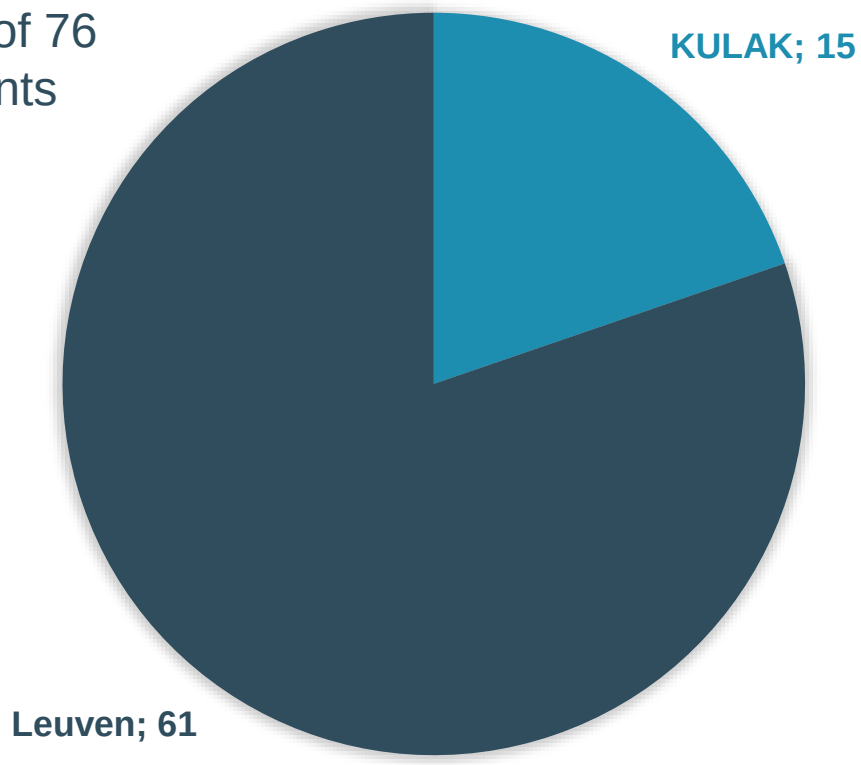
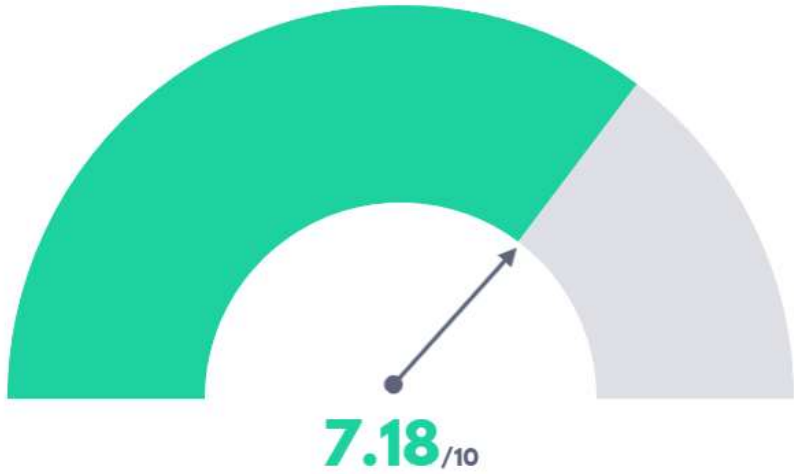
Bèta testers – students 3rd bachelor BMS

Total of 76 students



Preparedness felt by the students



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Some feedback from the students

"A visual guide is more useful than just written instructions to learn how to perform techniques and manipulations."

"Written instructions are often complex and can be a bit ambiguous, but a **demonstration video is clear**."

"The added troubleshooting is also useful especially when these problems occur often in the practical course."

"I felt more prepared and more capable going into the practical course."

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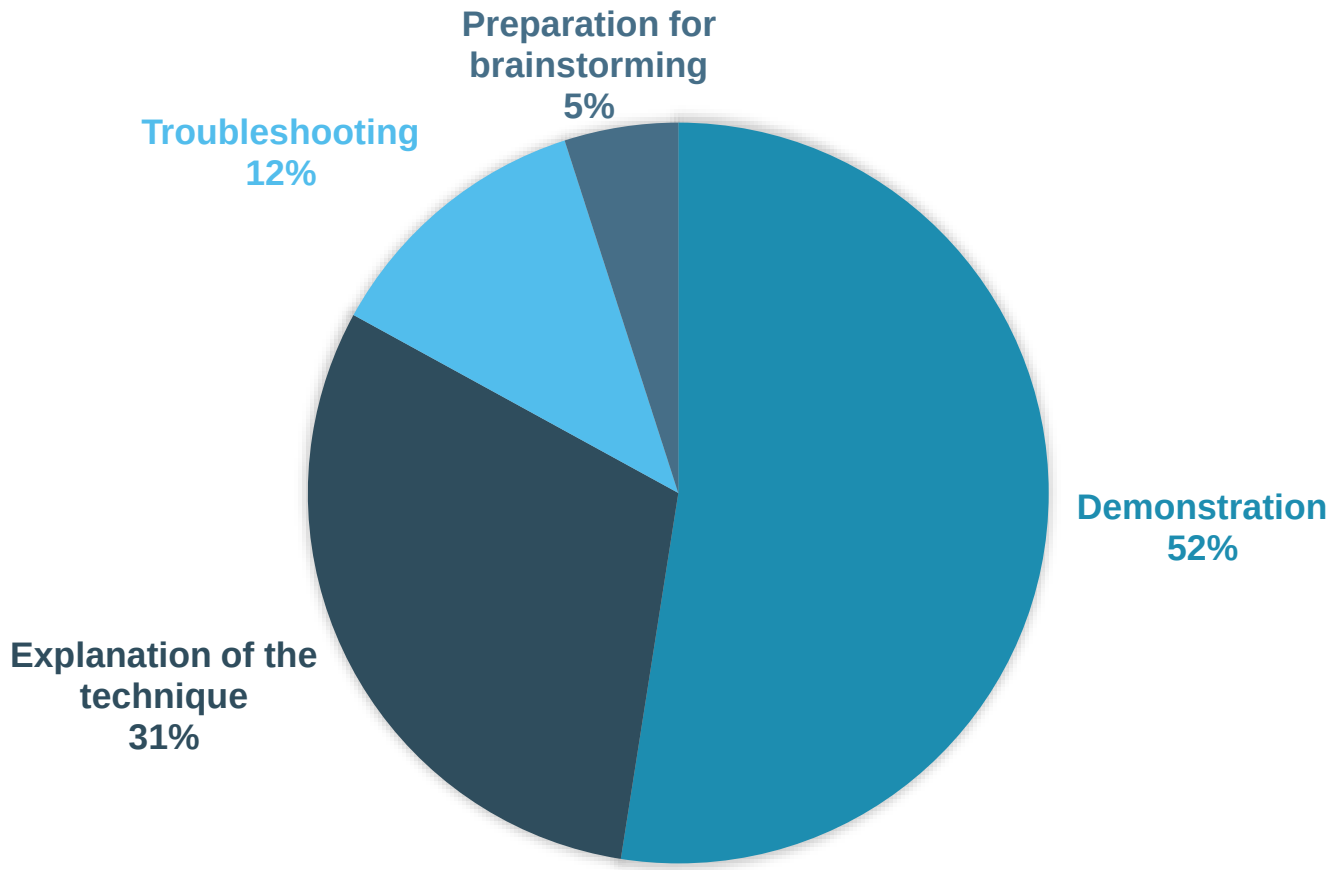
What exactly in the video was helpful?



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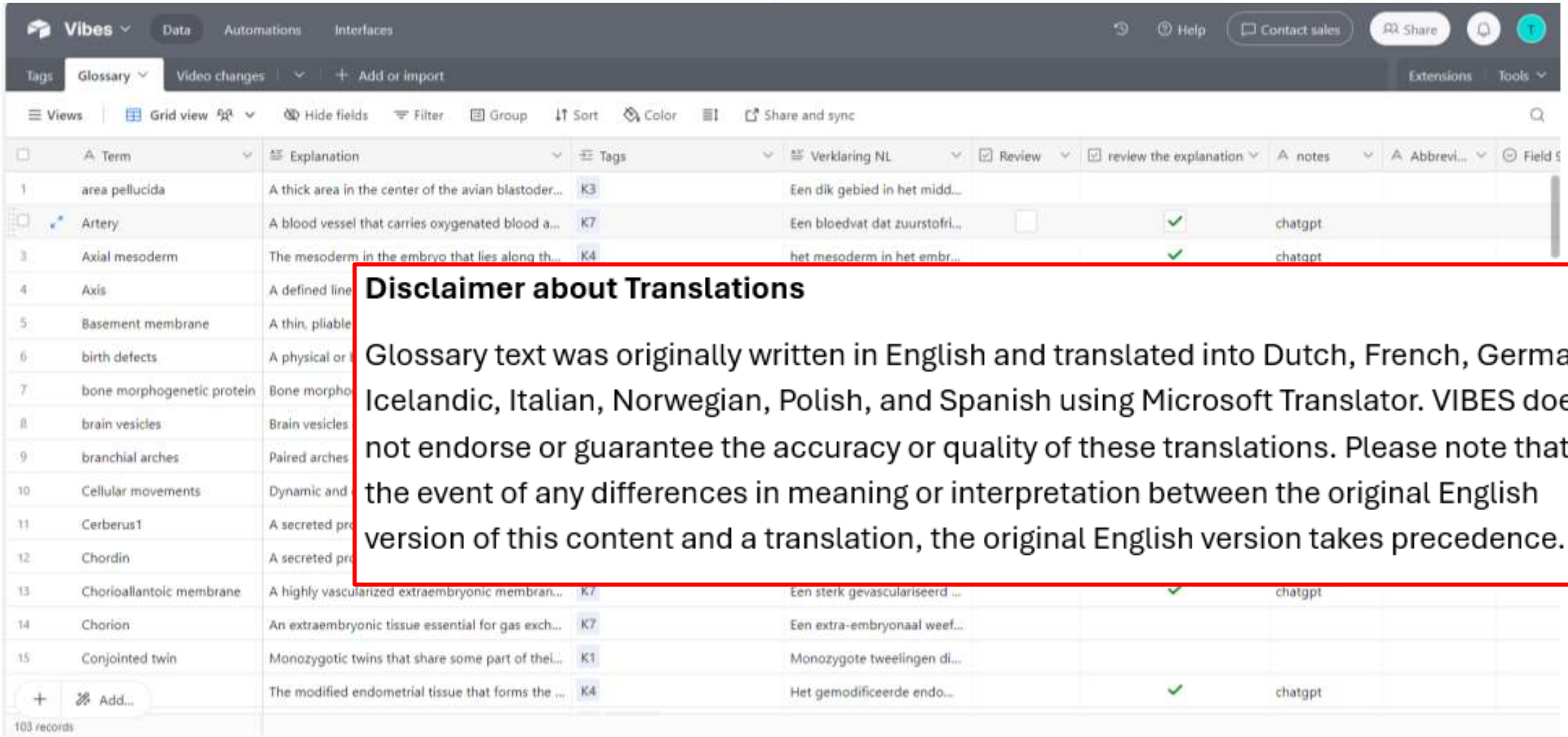
Glossary



Disclaimer about Translations

Glossary text was originally written in English and translated into Dutch, French, German, Icelandic, Italian, Norwegian, Polish, and Spanish using Microsoft Translator. VIBES does not endorse or guarantee the accuracy or quality of these translations. Please note that in the event of any differences in meaning or interpretation between the original English version of this content and a translation, the original English version takes precedence.

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Student protocols (SOP)

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Disclaimer:

The educational material provided herein is intended solely for teaching purposes, in the context of higher education in biomedical science and related disciplines. Any hands-on activities related to this material should be done only under the supervision of qualified educational staff. It is the responsibility of the user to perform experiments in an appropriate laboratory context and to take into account local safety, health, and environmental legislation.

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Teacher's guide

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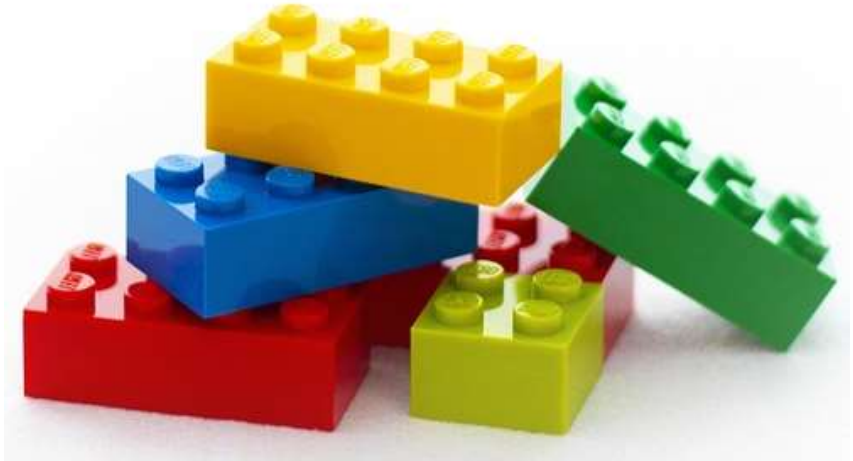
How to share materials?

VIBES provide all the lego parts on their website

→Accessible for teachers and students only



H5P?

- Incompatible
- Licence issues

Solution: interactive powerpoint used by all partner universities on their own learning platforms

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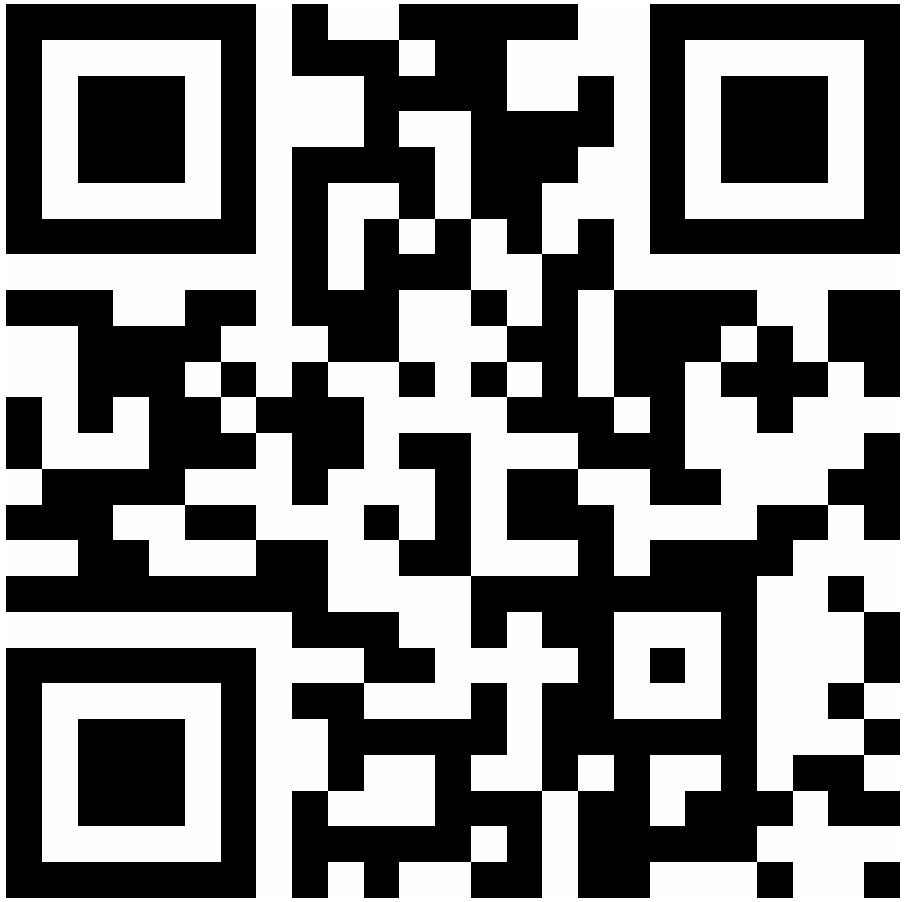
More info and conference data & venue



Home (vibes-edu.eu)

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Acknowledgements KU Leuven team

An Zwijsen

Przemko Tylzanowski

Tula Verhalle

Darshita Bhatt

Berlinda Hofmans

Tom Verbraeken

Lucas Mergan

Liesbeth Ory

Simon Vangoidtsenhoven

LIMEL

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Acknowledgements VIBES Network

Tylzanowski team (Medical University Lublin, Poland)

Zwijsen team (KU Leuven, Belgium)

Picolli and Pacelli team (University of Foggia, Italy)

Esguerra team (University of Oslo, Norway)

Sigurjónsson team (University of Reykjavik, Iceland)

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