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NextGenerationEU

National Recovery and Resilience Plan



OF THE REPUBLIC OF BULGARIA



SOFIA UNIVERSITY
MARKING MOMENTUM
FOR INNOVATION AND
TECHNOLOGICAL TRANSFER

Scientific group 3.1.8 Plant parasites

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Main objective: to study multiple aspects of plant-to-plant parasitism in the case of dodders - *Cuscuta* spp. (family Convolvulaceae)



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What are dodders?

Stem holoparasites;

Non-photosynthetic or cryptically photosynthetic, leaves are highly reduced to scales;

All parasites belong to the genera *Cuscuta* – dodders, not related but very similar to *Cassytha* – laurel dodders;

Cause enormous crop yield losses annually and worldwide;

Highly invasive.

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Why studying them?

Fundamental significance – evolution of plant parasitism, the switch to heterotrophic lifestyle;



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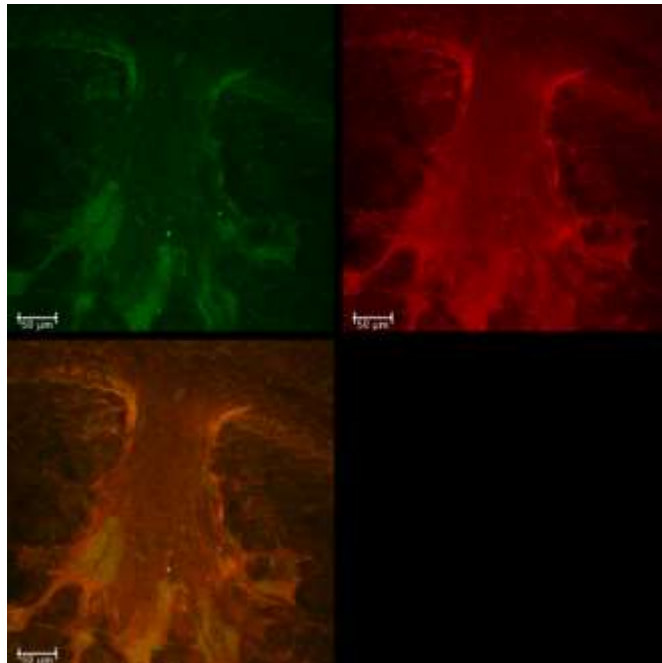
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Why studying them?

Molecular mechanisms – how they locate, choose and invade host plants and why some plants are resistant;



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Why studying them?

Agricultural significance – causing up to 80% yield loss in over 50 crop plants;



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Why studying them?

Ecological significance – highly invasive and destroying sensitive ecosystems, but also important regulators of plant diversity;

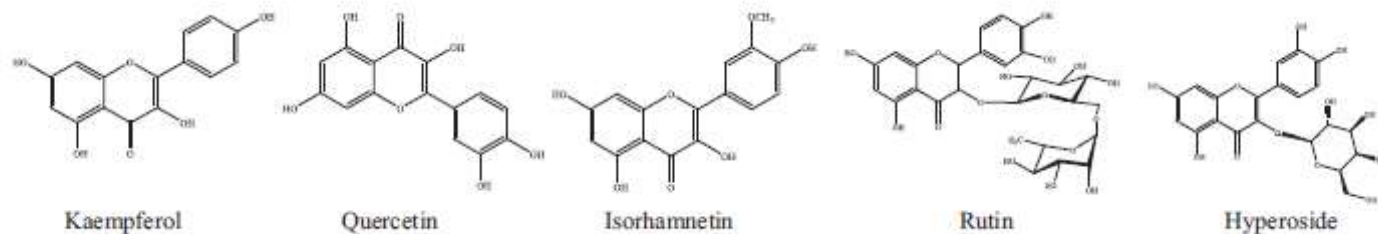


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Why studying them?

Medicinal plants – rich in polyphenolics and other biologically active compounds;





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Implementation of the project

Establishment of a team

Core research team is as follows:

- Assoc. Prof. Lyuben Zagorchev, group leader, with expertise in molecular biology and biochemistry;
- Assoc. Prof. Denitsa Teofanova, an established researcher, with expertise in molecular biology and biochemistry;
- Assoc. Prof. Anita Tosheva, senior associate, with expertise in botany;
- Assoc. Prof. Kalina Shishkova, senior associate, with expertise in antiviral activity of natural compounds;
- Assist. Prof. Kalina Pachedjieva, senior associate, with expertise in plant ecology;

Young scientists:

- Martin Savov, PhD student, young researcher;
- Stefan Savov, PhD student, young researcher;
- Bianka Marinova, master student;
- Bilyana Chakarova, master student;
- three more bachelor degree students;

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Implementation of the project

Internships



LC-MS of plant hormones,
September, 2024, hosted by
Prof. Ilse Kranner



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

Non-invasive ion flux
measurements, 2025, hosted by
Prof. Sergey Shabala

**UNIVERSITY OF
WESTMINSTER**



Two incoming students in May,
2024

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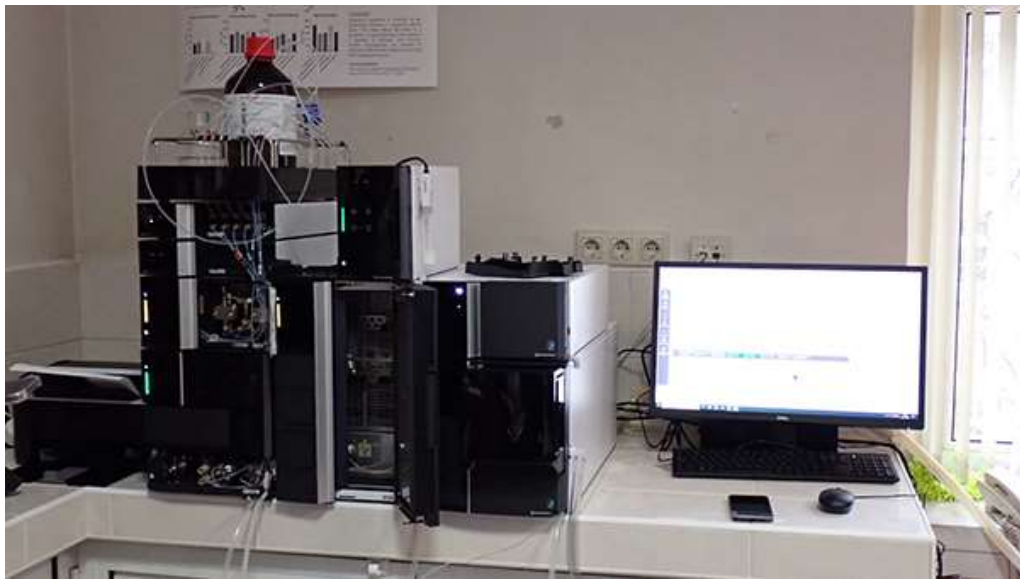
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Implementation of the project

Increase of experimental potential

Shimadzu LCMS 2050 uHPLC-MS system was acquired and installed at the end of January



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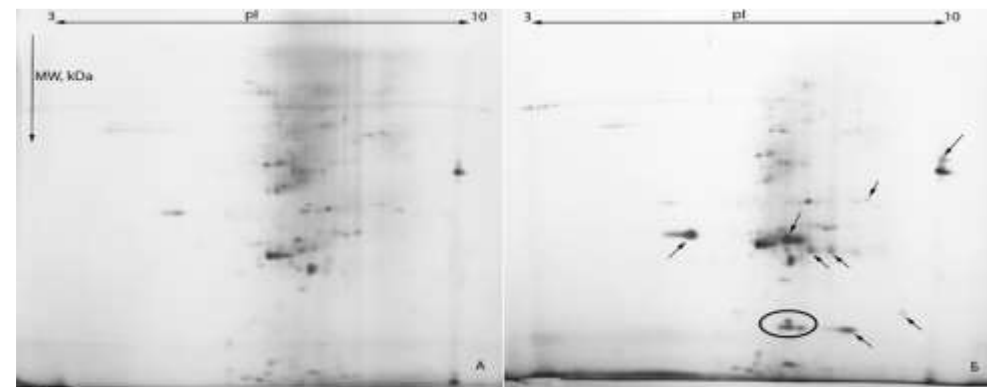
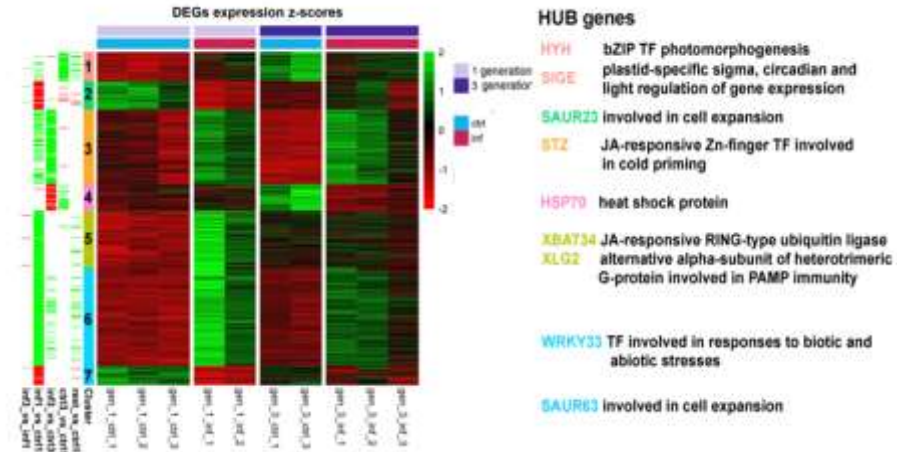
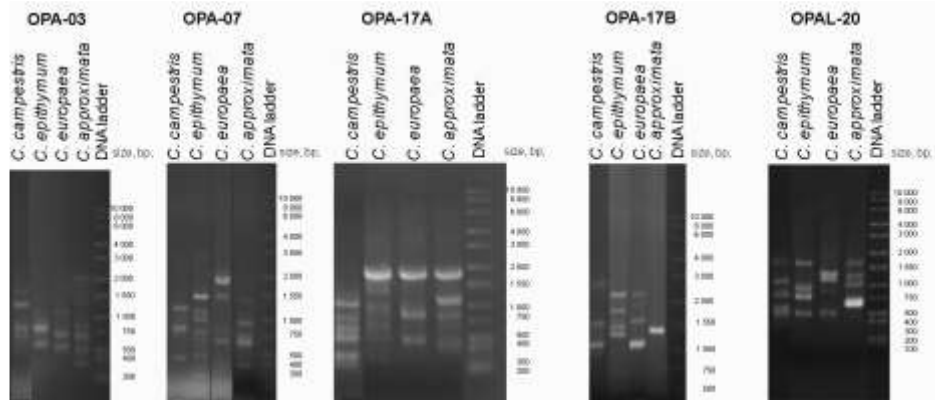
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Implementation of the project

Experimental work



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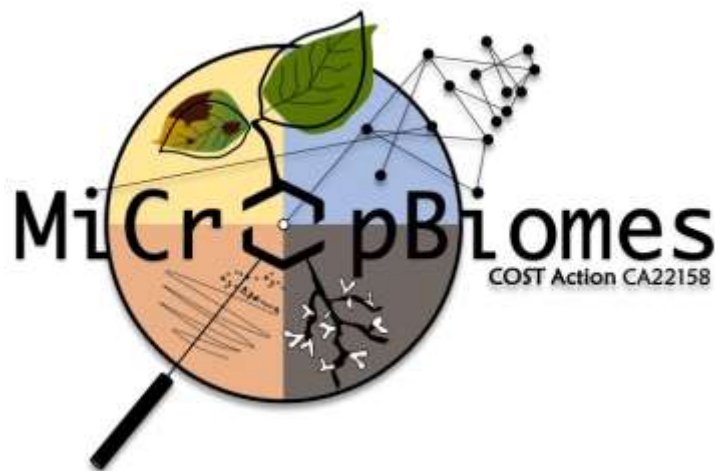
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Spin-off



epicatch



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Implementation of the project

Indicators

	Indicator	in 2024	final	Until March, 2024
1	Number of publications (referenced in WoS) (number of publications in 2020: 6)	7	8	5 under preparation
2	Patent applications			
3	Number of leading researchers	1	1	1
4	Number of junior researchers planned to participate in research	1	2	2 + 1 planned
5	Contracts/projects with industry			
6	Participation in international networks or project	1	2	2 + 1 submitted

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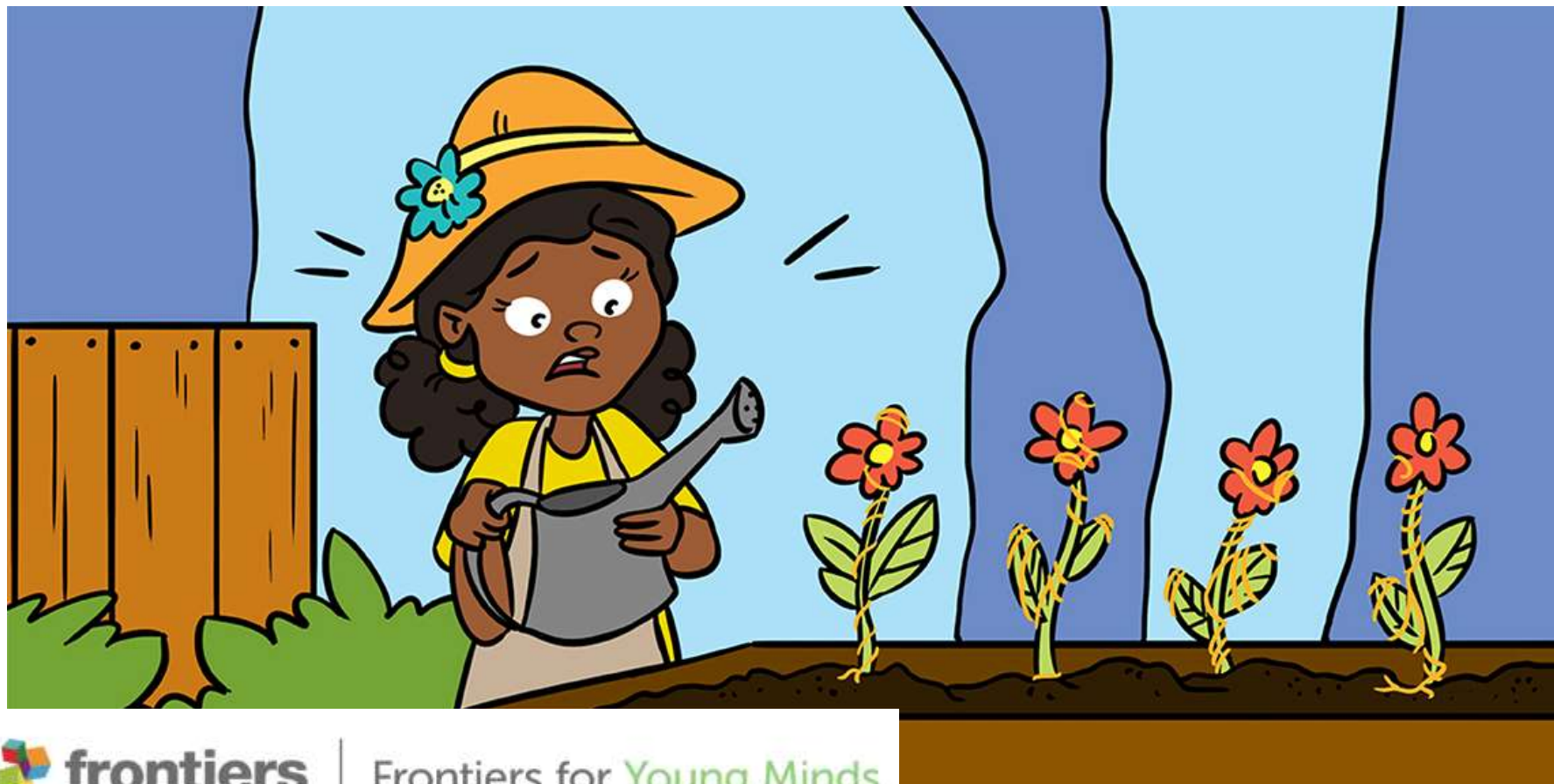
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frontiers

Frontiers for Young Minds

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