PARAQUA

CA20125

Working Group 3
Control strategies and valorization of research for application

Online, January 29th, 2024

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Description of WG3

Aim

- WG3 aims to **bring together all current practical and theoretical knowledge on control strategies for parasitism risk in algal biotech**, but also to explore the benefits of using zoosporic infections as metrics in natural systems monitoring or as source material for bio-refined products.

- WG3 will make the acquired knowledge from WG1 and 2 available and put this into practice for the **prevention, management and control of zoosporic parasites for industrial production**, and on the potential use of zoosporic parasites in natural ecosystem management

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Description of WG3

DESCRIPTION OF DELIVERABLES

- **Searchable database (D1.3)** to catalogue and identify available expertise based on a questionnaire survey

- **Handbook chapters (D2.3),** reviews in scientific and vocational journals on best practises in the prevention, management and control of zoosporic infections in production systems; current strategies based on the learning from nature principles for prevention; management and control of zoosporic infections in microalgal biotech including an evaluation of cost-effectiveness and scaling up potentials; the potential use of zoosporic parasites as biocontrol agents to control harmful algal or cyanobacterial blooms in natural systems; the potential of innovative biorefinery approaches to extract more than one valuable compound from (infected) host cultures

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Description of WG3

https://forms.gle/snWph1WA4zQPiayw7

Searchable database (D1.3) to catalogue and identify available expertise based on a questionnaire survey

1. Data contact
    a. Name:
    b. Email:
    c. Entity:
    d. Website:
    e. Country:
2. Profile
    a. Company
    b. Research centre
3. Expertise/capabilities
    a. Biomass production: pilot scale for research
    b. Biomass production: large commercial
    c. Services: analytics of biomass and water
    d. Services: microbial analysis

For those indicating biomass productions:

4. Production scale
    a. Laboratory scale (<1 m3)
    b. Pilot scale (<100 m3)
    c. Large scale (>100 m3)
5. Production technology
    a. Bubble columns
    b. Tubular photobioreactors
    c. Flat panels
    d. Open raceway
    e. Thin-layer reactors
6. Market application
    a. Nutraceuticals/cosmetics
    b. Food/feed
    c. Agriculture/Chemicals
    d. Treatment of residuals
7. Strains being produced
    a. Names:

For those indicating services:

8. Analytic determinations on biomass
    a. Proximal analysis: proteins, lipids, carbohydrates
    b. Lipids analysis: fatty acids, sterols, pigments
    c. Proteins: aminoacids, peptides.
    d. Sugars: composition, profile.
    e. Bioassays: antioxidants, biostimulants, biopesticides, etc...
9. Analytic determinations on water:
    a. Inorganic compounds (nitrate, ammonium, phosphate, etc.)
    b. Organic compounds (polysaccharides, phyto-hormones, etc..)
    c. Emerging pollutants
    d. Heavy metals
10. Microbial analysis
    a. Microbiology using conventional methods
    b. Conventional microscopy
    c. Advanced microscopy (Post-processing of digital images)
    d. Omics tools
    e. Others
11. Availability of culture collections
    a. Culture collection of microalgae
    b. Culture collection of microalgae parasites
    c. Both of them
    d. Others

For all the participants:

12. Availability of data about the presence of parasites in the cultures?
    a. No
    b. Yes, but confidential.
    c. Yes, and available to share
13. Availability of sequence data / barcodes available
    a. No
    b. Yes
    c. If Yes, which ones
14. Availability to implement detection methods in your facility
    a. No
    b. Microscopy related methods
    c. Molecular biology-related methods
    d. Others
15. Interest to work on collaborative activities on this topic
    a. Collect data and create a database of zoosporic parasites
    b. Participate in workshops and training courses
    c. Contribute to publications and papers
    d. No
16. Relevant documents or publications: please include the link or DOI to relevant documents from your institution

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Marca temporal	Dirección de correo electrónico	Name	Entity	Website	Country	Profile	Expertise/capabilities	For those indicating biomass production: Production scale	For those indicating biomass production: Production technology	For those indicating biomass production: Market application	For those indicating biomass production: Strains	For those indicating services: Analytic determinations on biomass	For those indicating services: Analytic determinations on water	For those indicating services: Microbial analysis	For those indicating services: Availability of culture collections	Availability of data about the presence of parasites in the cultures?	Availability of sequence data / barcodes available (if yes, which ones)	Availability to implement detection methods in your facility	Interest to work on collaborative activities on this topic	Relevant documents or publications: please include the DOI of relevant documents from your institution	Please upload a one page file including the description of your entity	For those indicating others, please describe it:
3/3/2023 9:39:12	fusunnakgul@gmail.com	FUSUN AKGUL	PERSON	https://www.researchgate.net/profile/Fuesun-Akguel	TURKEY	UNIVERSITY	Biomass production: large commercial	Pilot scale (<100 m3)	Open raceway	Food/feed	the first 4	all of them	Inorganic compounds (nitrate, ammonium, phosphate, etc.)	Microbiology using conventional methods	Culture collection of microalgae	Yes, and available to share	yes, for microalgae ITS region, for Cyanobacteria 16 S	Microscopy related methods	Contribute to publications and papers	I have no publication related to algae parasites directly		
3/7/2023 15:35:33	marco.thines@senckenberg.de	Marco Thines	white	www.senckenberg.de	Germany	Research center	Services: microbial analysis	Laboratory scale (<1 m3)	Bubble columns	Agriculture/Chemicals	Coscinodiscus	Molecular barcoding, genomics	eDNA	Conventional microscopy	Both of them	Yes, and available to share	ITS, cox2, SSU	Molecular biology-related methods	Contribute to publications and papers	n/a - or rather, not sure what to add, as we have many publications on the topic.		
3/21/2023 12:01:30	maja@algen.si	Maja Berden Zrimec	AlgEn, algal technology centre, llc	www.algen.eu: www.algaebiogas.eu	Slovenia	Company	Biomass production: pilot scale for research	Pilot scale (<100 m3)	Open raceway	Agriculture/Chemicals	Mix with prevailing Scenedesmus strains & pure Spirulina culture	Bioassays: antioxidants, biostimulants, biopesticides, etc..	Inorganic compounds (nitrate, ammonium, phosphate, etc.)	Conventional microscopy	Culture collection of microalgae	Yes, and available to share	NGS sequeencing	Microscopy related methods	Contribute to publications and papers	We would need cooperation for interpretation and publication of metagenomic data from ponds in biogas digestate plants (algae fed with anaerobic digestate)		
7/11/2023 11:19:29	marco.thines@senckenberg.de	Marco Thines	Senckenberg Gesellschaft für Naturforschung / Goethe University	thines-lab.senckenberg.de	Germany	Research center	Services: microbial analysis	Laboratory scale (<1 m3)	Bubble columns	Nothing, needed to fill.	Nothing, needed to fill.	Nothing, needed to fill.	Nothing, needed to fill.	Omic tools	Both of them	Yes, and available to share	SSU / 18S, cox2	Molecular biology-related methods	Collect data and create a database of zoosporic parasites	https://scholar.google.com/citations?user=8jgvb8IAAAAJ&hl=de		
7/11/2023 13:11:53	gabrielbombo@greencolab.com	Gabriel Bombo	GreenCoLab	https://www.greencolab.com/greencolab-organization/gabriel-bombo/	Portugal	Company	Biomass production: pilot scale for research	Laboratory scale (<1 m3)	Bubble columns	Food/feed	Spirulina	Lipids analysis: fatty acids, sterols, pigments	Inorganic compounds (nitrate, ammonium, phosphate, etc.)	Conventional microscopy	Culture collection of microalgae	Yes, but confidential.	Yes, KX278369, OQ184858.	Molecular biology-related methods	Participate in workshops and training courses	https://www.greencolab.com/publications/		
7/11/2023 13:51:02	slobodan.zlatkovic.bk@gmail.com	Slobodan Zlatković	Agency for ecological consulting "Akvatorija"	www.akvatorija.rs	Serbia	Company	Services: analytics of biomass and water	Laboratory scale (<1 m3)	Bubble columns	Treatment of residuals	Attached bacteria	Bioassays: antioxidants, biostimulants, biopesticides, etc..	Inorganic compounds (nitrate, ammonium, phosphate, etc.)	Microbiology using conventional methods	Others	No	No	Microscopy related methods	Contribute to publications and papers	https://doi.org/10.3390/w14030391		
7/11/2023 20:05:28	nagwa_phyco@yahoo.com	Nagwa Gamal-eldin Mohammady	Professor of phycoligy	Sci.alexu.edu.eg	Egypt	Faculty of science Alexandria university	Biomass production: pilot scale for research	Laboratory scale (<1 m3)	Flat panels	Biofuel and biorefinery	Nannochloropsis	Proximal analysis: proteins, lipids, carbohydrates	Organic compounds (polysaccharides, phytohormones, etc..)	Conventional microscopy	Culture collection of microalgae	No	No	No	Contribute to publications and papers	NA		
10/25/2023 12:17:13	andrea.tarallo@cnr.it	Andrea Tarallo	National Research Council of Italy	https://www.cnr.it/en	Italy	Research center	Other						No					Microscopy related methods, Molecular biology-related methods, Others	Collect data and create a database of zoosporic parasites, Participate in workshops and training courses, Contribute to publications and papers, Collaborate and contribute to developing new funding proposals		Data management, FAIR data, Open science	

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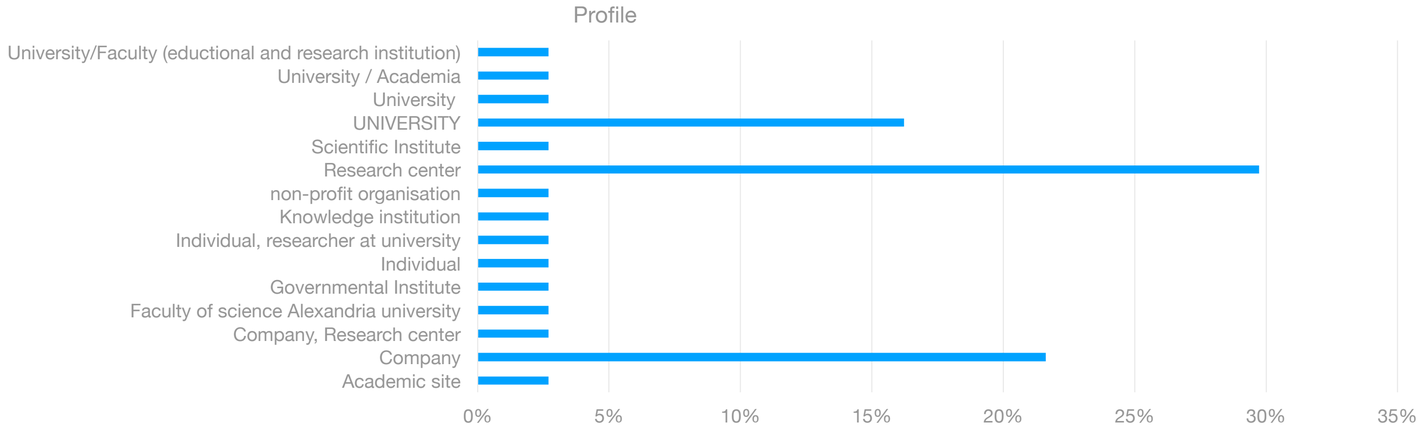
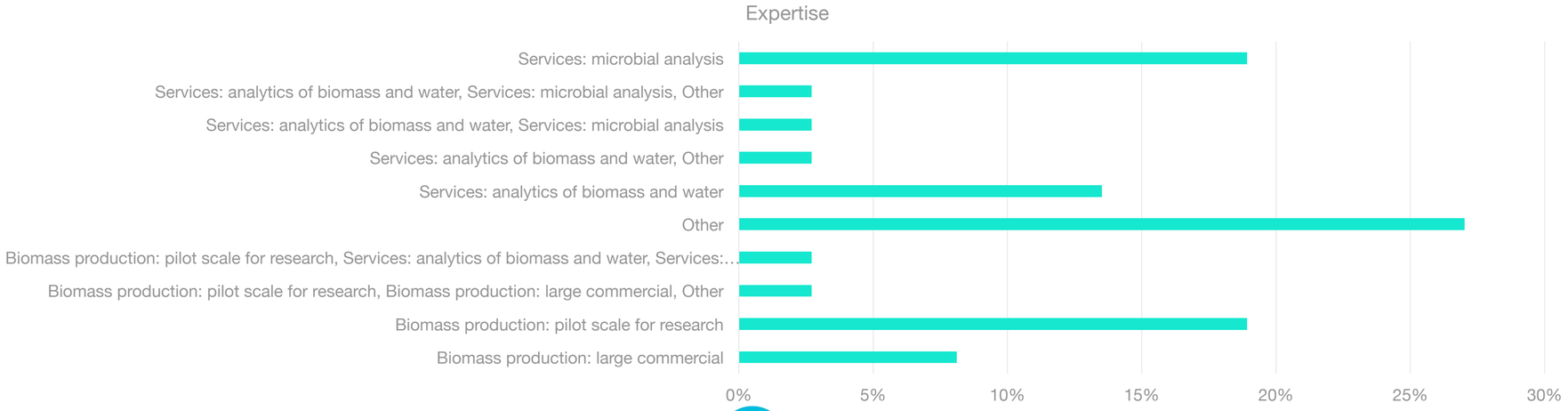
Searchable database (D1.3) to catalogue and identify available expertise based on a questionnaire survey





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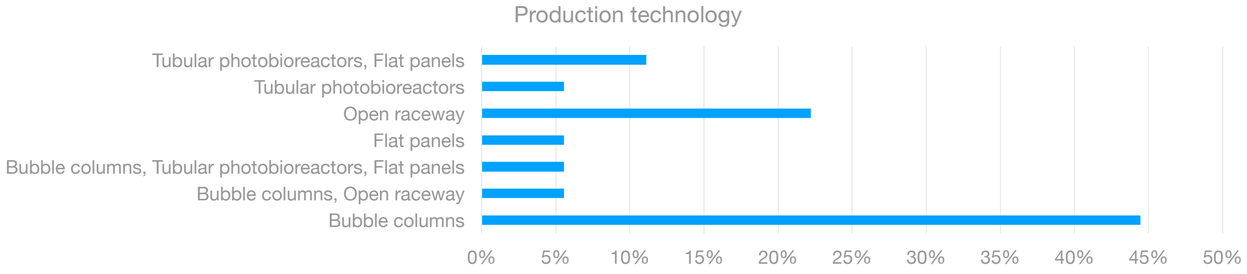

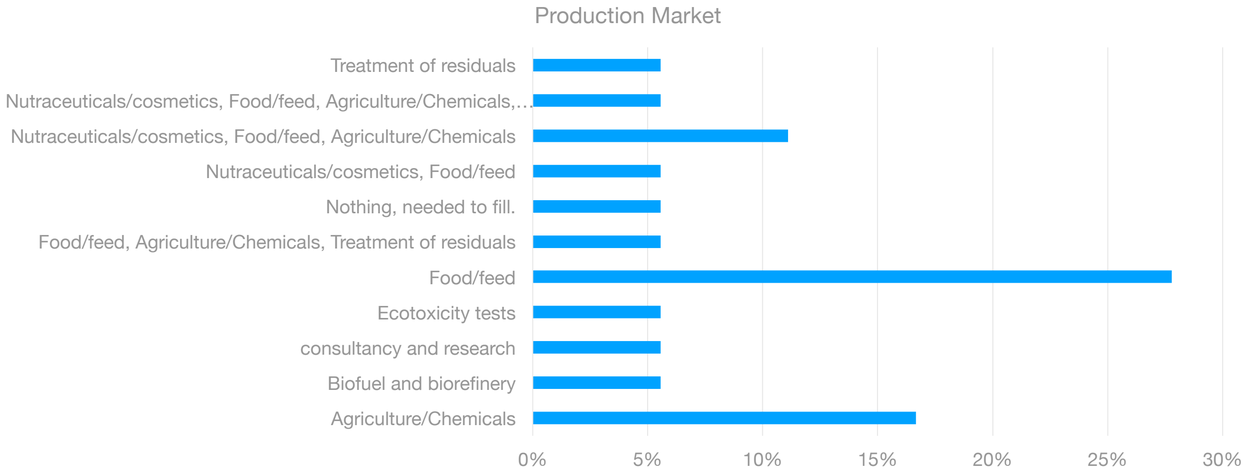

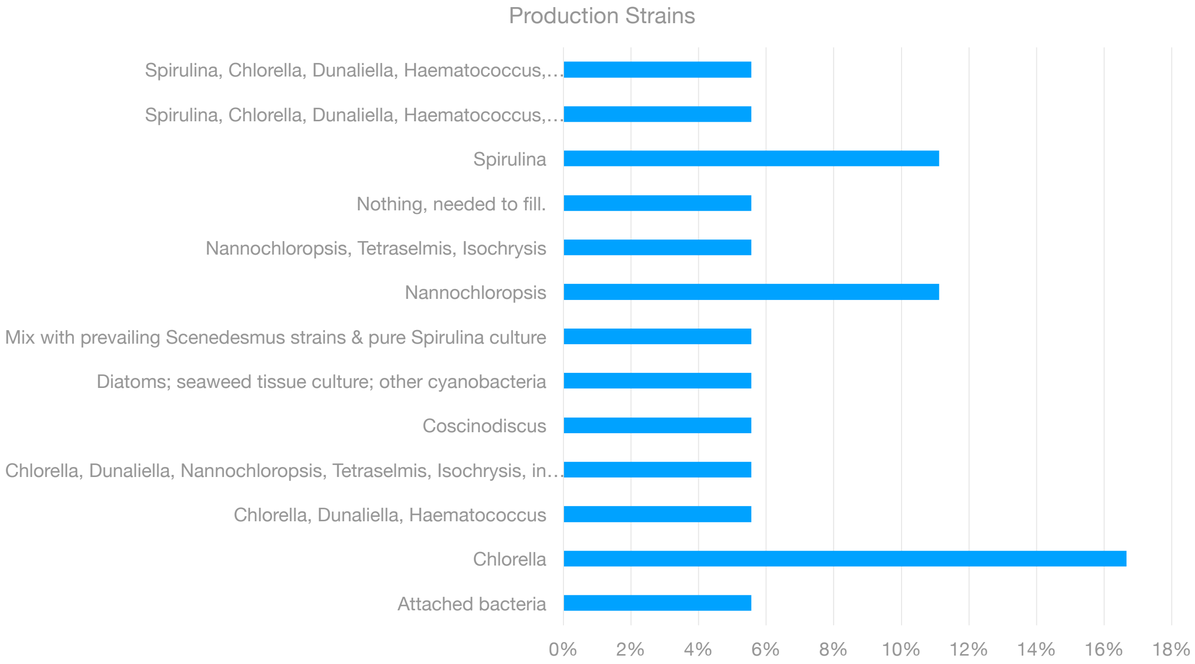

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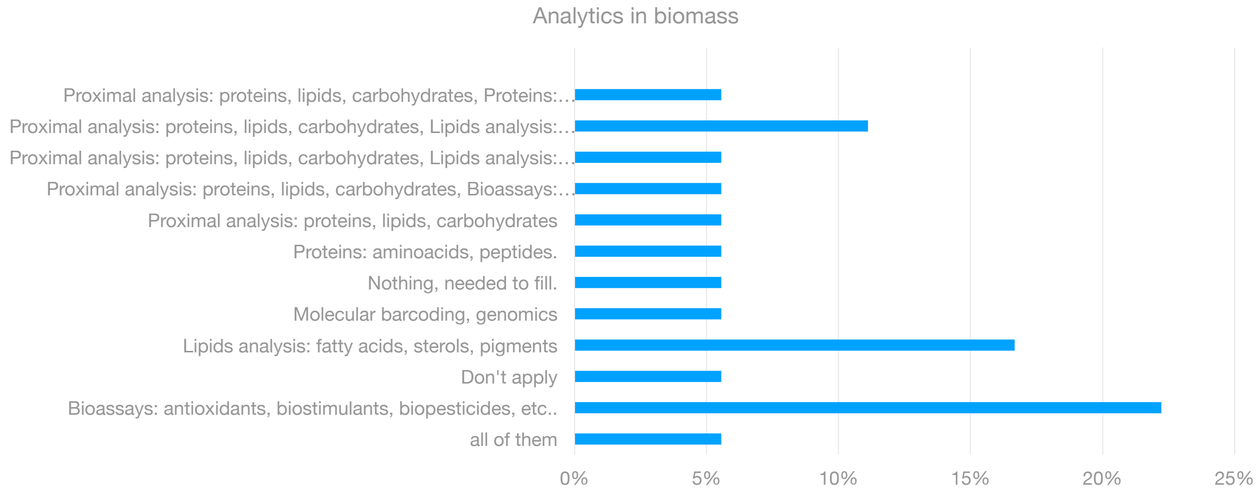

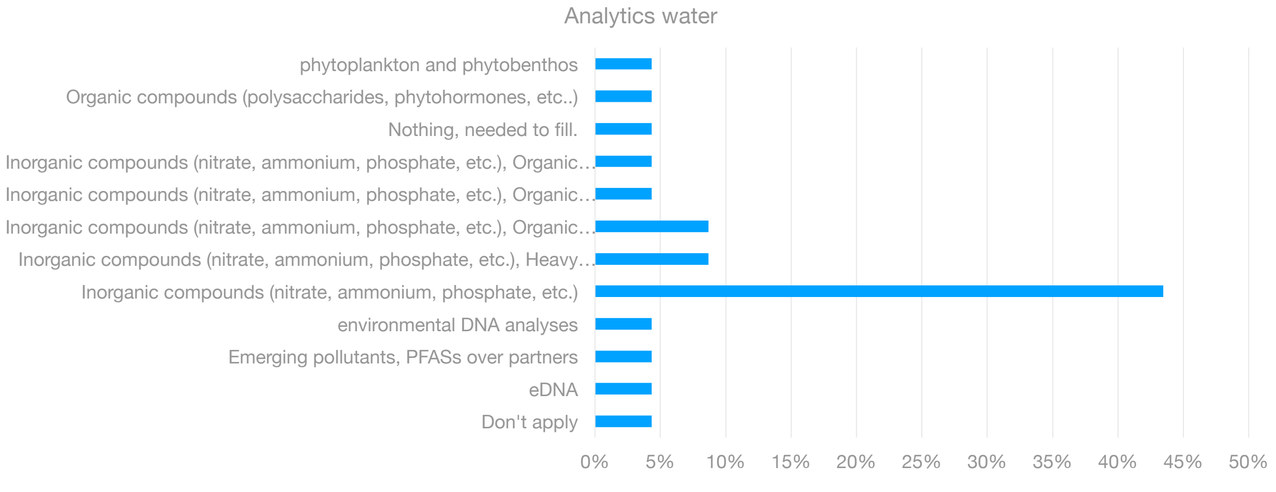

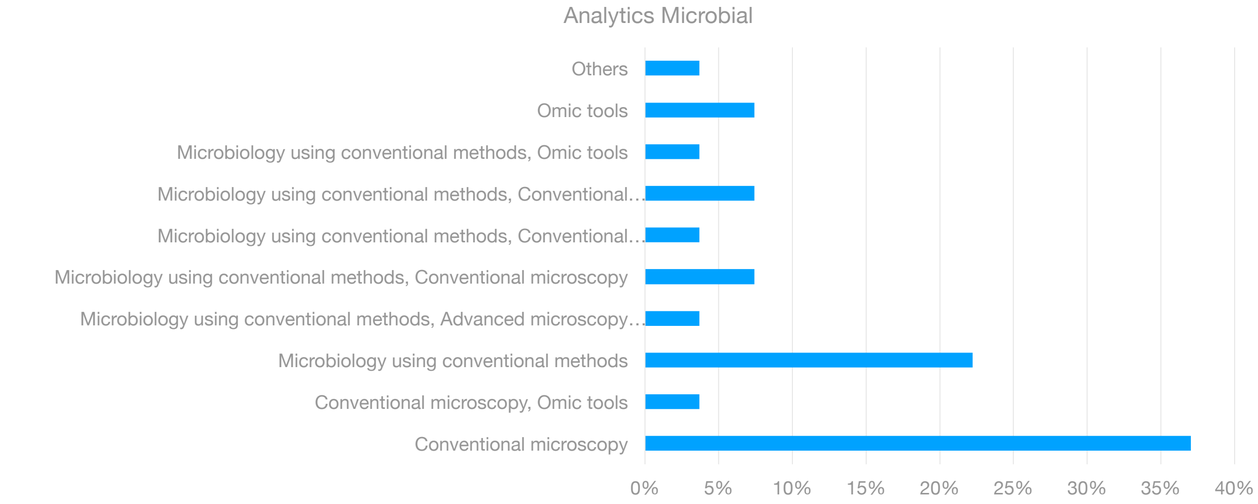

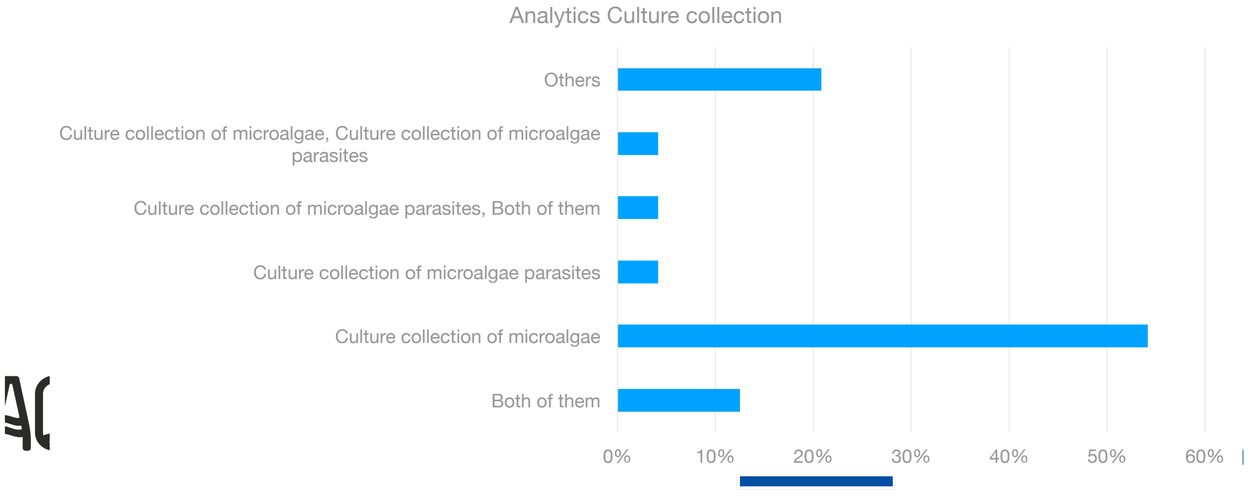

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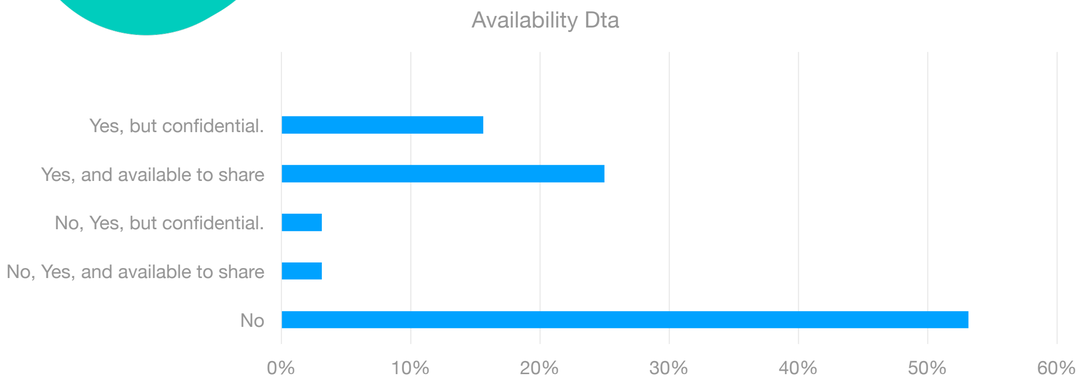

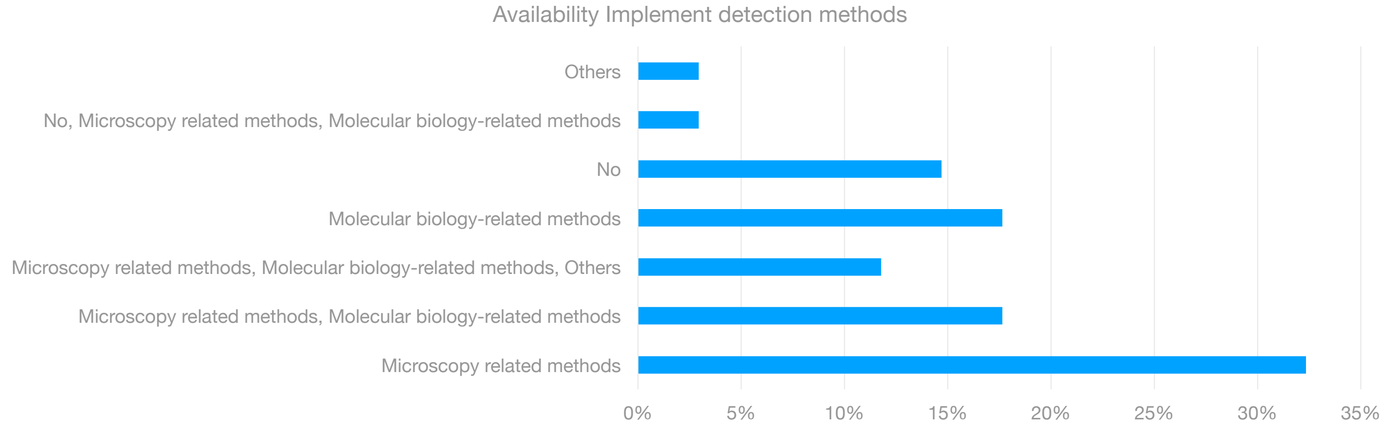

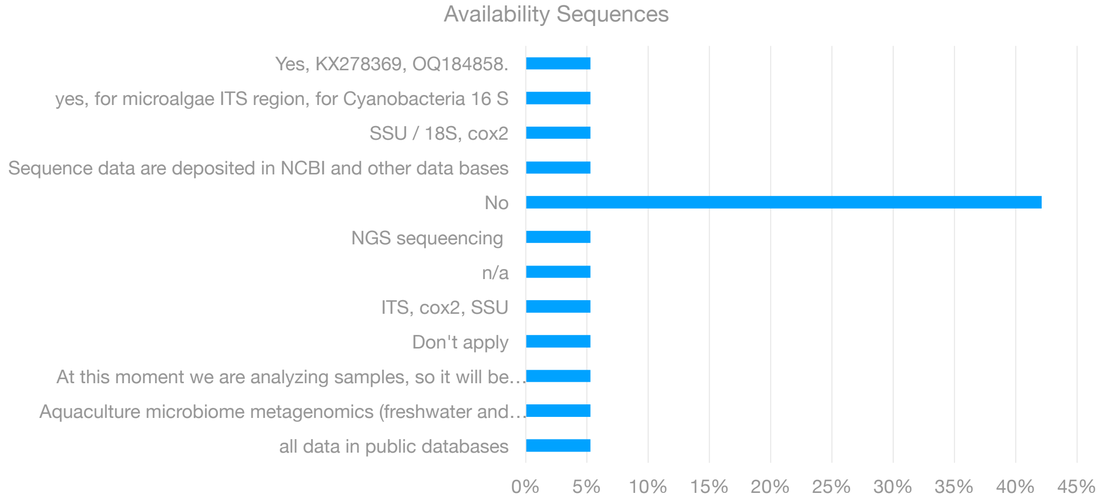

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Searchable database (D1.3) to catalogue and identify available expertise based on a questionnaire survey

1, Modifications on the survey needed?
- Modification of questions
- Single/multiple responses
- Other fields

2, Integration of the information into a database
- Integration in WG1/WG2 database
- Separate database
- Other databases already existing

3, Integration into the website
- Dissemination ot obtain more respopnse
- Structure of visualization tool
- Others

4, Use of information
- Deliverable
- Report/Paper
- Others

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Description of WG3

Handbook chapters (D2.3), reviews on best practises in the prevention, management and control of zoosporic infections in production systems

Work plan

- Collect and analyse existing data from microalgae reactors
  - Available data (metadata, origin, results)
  - Database structure (csv, json)
  - Analysis by experts (identification, quantification)

- Perform specific experiments to develop suitable models
  - Model structure (parameters, variables)
  - Research plan (time, measurements)
  - Validation

- To simulate different scenarios at industrial scale

- To prepare scientific publications – participation in conferences - special issue

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Description of WG3

Handbook chapters (D2.3), reviews on best practises in the prevention, management and control of zoosporic infections in production systems

To model/simulate different scenarios at industrial scale

We need your help

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