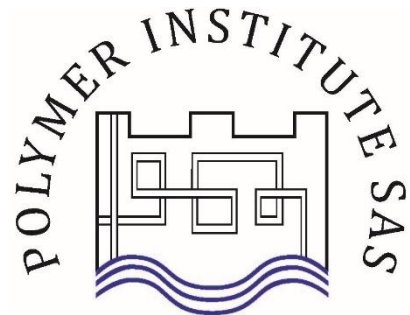




Current research work

Dr. Mohamed Shaalan

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03.07.2025

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Education

- Bachelor of veterinary sciences in May 2010

Faculty of veterinary medicine, Cairo University

- Master of veterinary sciences in Jan 2014

Faculty of veterinary medicine, Cairo University

Evaluation of toxicity of silver nanoparticles in rats

- Doctoral degree in veterinary medicine (Dr. med. vet.) in 2017

University of veterinary medicine Vienna

Antimicrobial activity of nanoparticles against fish pathogens



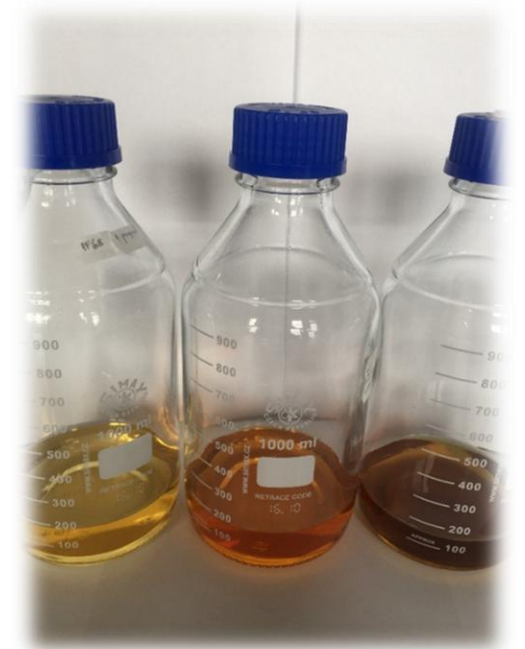
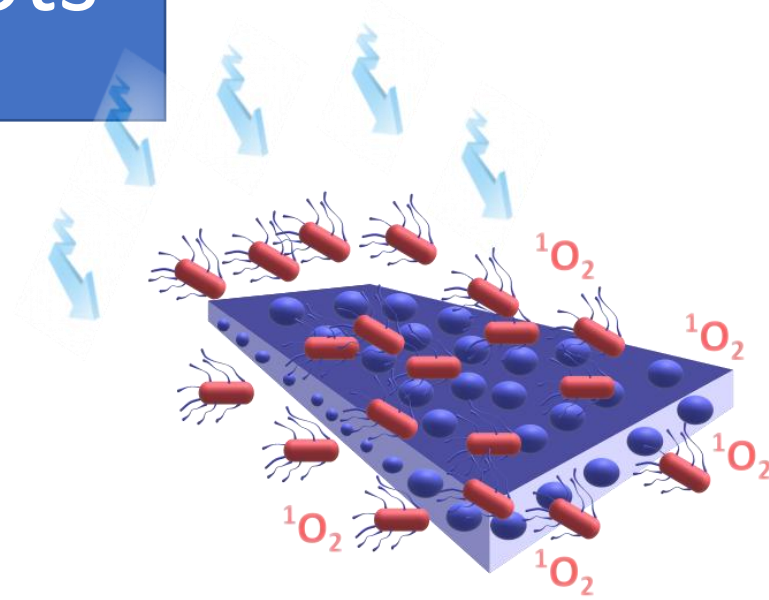
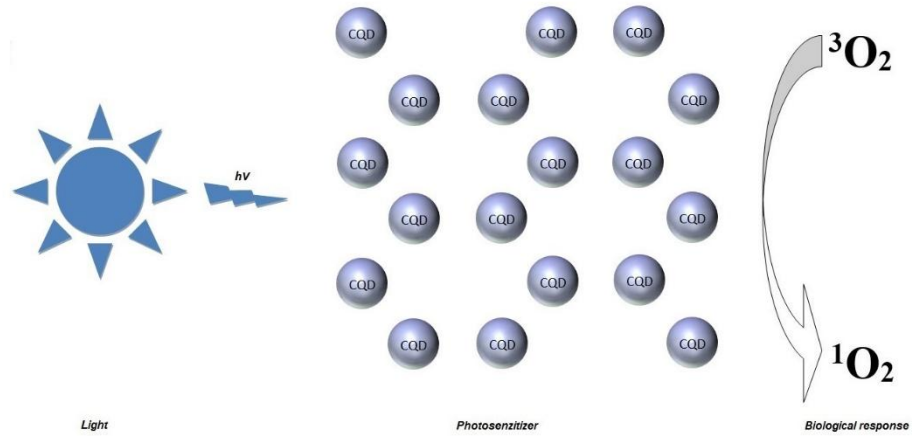
Postdoctoral career

- **Veterinary medical research institute**, Budapest, Hungary (Oct 2018 - Jan 2019)
Project: Antibacterial activity of nanoparticles in carp fish
- Institute of human health, **INSERM**, Nantes, France (June 2019 - Dec 2019)
Project: Conjugation of affitins with nanoparticles for Mycobacteria treatment
- **University of veterinary medicine Vienna, Austria** (May 2021 - Nov 2021)
Project: Chitosan nanoparticles effect during *Yersinia ruckeri* infection
- **Polymer Institute, Slovak Academy of Sciences, Bratislava, Slovakia** (Feb 2023 – now)
Project: Antibacterial evaluation of polymeric materials

Current research

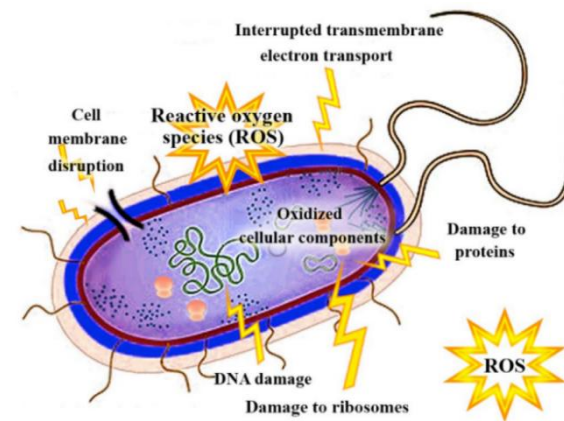
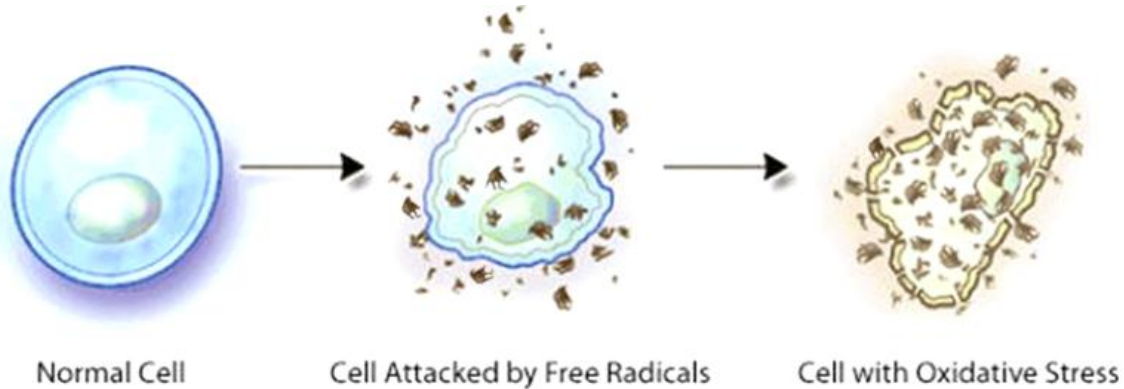
- Synthesis and Characterization of Carbon Quantum Dots
 - a. Hydrophobic
 - b. Hydrophilic
- Nanocomposites synthesis (eg. PDMS with QDs)
- Polymeric nanoparticles (eg. Chitosan NPs)

Carbon Quantum dots



Mechanism of photodynamic therapy

 Bacteria strains
  Carbon quantum dot
  Polymer matrix
  Blue light



The Microbiology Lab at PISAS



Antibacterial evaluation ISO22196

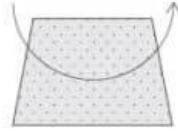
1. Prepare Sample

5cm x 5cm
3x Test samples
6x Untreated Samples



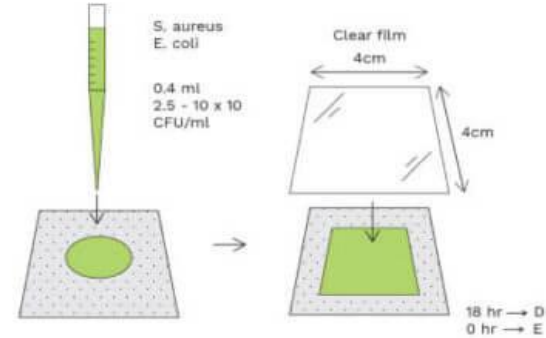
2. Sterilization

70 % ethanol



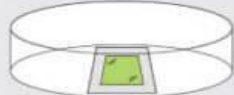
3. Inoculation

S. aureus
E. coli
0.4 ml
2.5 - 10 x 10⁶ CFU/ml



4. Incubation

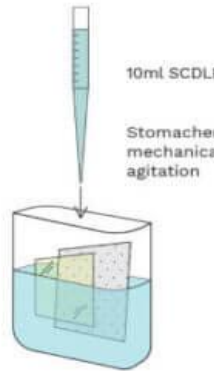
24hrs, 35°C, RH>90%
covered petri dish



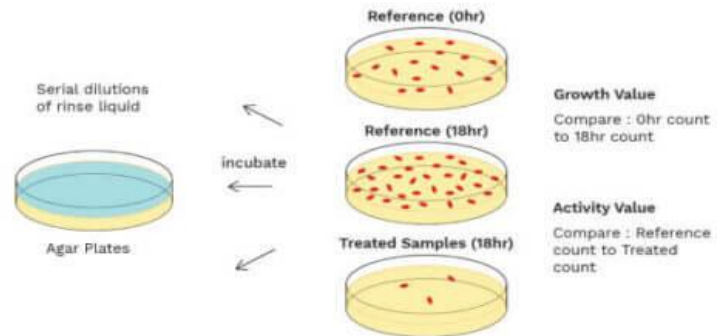
5. Wash and Shake

10ml SCDLP

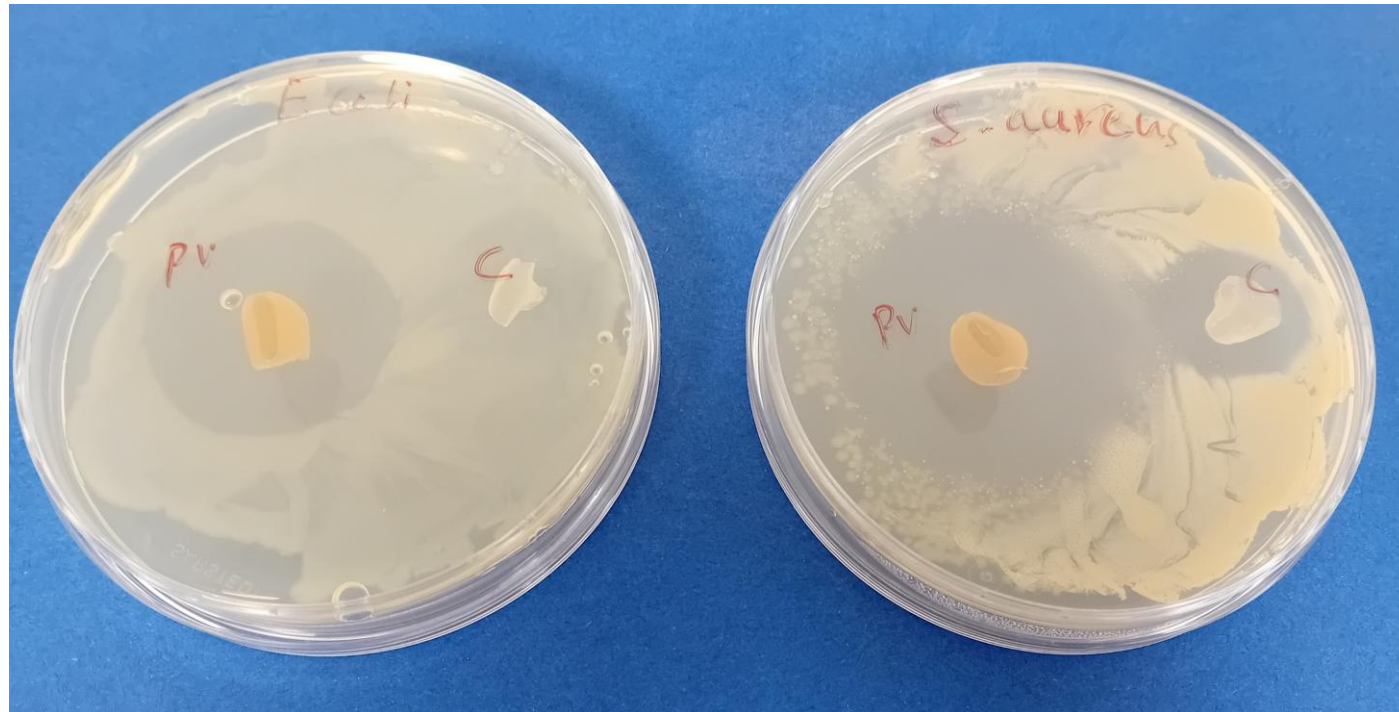
Stomacher
mechanical
agitation



6. Count



Disk diffusion assay



Current projects

- HORIZON NOVA project

(06.02.2023 – 05.02.2025)

Role: member of research team

Funding: Horizon 2020

- NonATBofTBD - Non-antibiotic approach for the treatment of tick-borne infections

(1.7.2024 - 30.6.2028)

Role: member of research team

Funding: APVV



Antibacterial activity of 3D printed thermoplastic elastomers doped with carbon quantum dots for biomedical applications

Mohamed Shaalan^{1,2} · Anna Vykydalová^{1,3} · Helena Švajdlenková¹ ·
Zuzana Kroneková¹ · Zoran M. Marković⁴ · Mária Kováčová¹ · Zdenko Špitálský¹

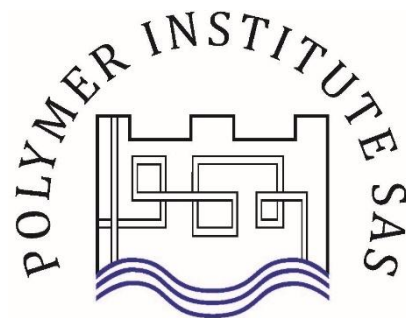
Received: 19 February 2024 / Revised: 7 May 2024 / Accepted: 28 May 2024 /

Published online: 1 June 2024

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Topics we want to collaborate on..

- Applications of CQDs in medicine (Antimicrobial, Anti-cancer,..)
- Polymers in nanomedicine
- AMR combatting with polymers and nanoparticles



Thank you for your attention

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