

# IPH ZADAR-PP7 FINAL MEETING

ADSWiM | IPH ZADAR (PP7) | Jadranka Šangulin

2nd partners, GA and SC Meeting | 14th of December 2021

## WP 4: Innovative solutions in analytical and microbiological controls of urban wastewater treatment



### WP 4.3.: Innovative solutions in analytical and microbiological controls of urban wastewater treatment,

- **concentrations of nutrients (SW)**
- **trace elements** (Co, Ni, Mn, Cu, Cr, As, SC, Pb, Zn, Hg) **UNIVPM**
- the main hydrological variables (T, salinity, conductivity, pH, dissolved oxygen, oxygen saturation, Chla, turbidity)
- RH ZADAR & SPLIT - SURVEY OF EMERGING PATHOGENS- SW, WW - **OGS**
- **concentrations of nutrients, trace elements (WW)**
- other wastewater parameters



### WP 4.6. IAMD Results analysis

#### D:4.6.1. Feasibility study SWOT analysis

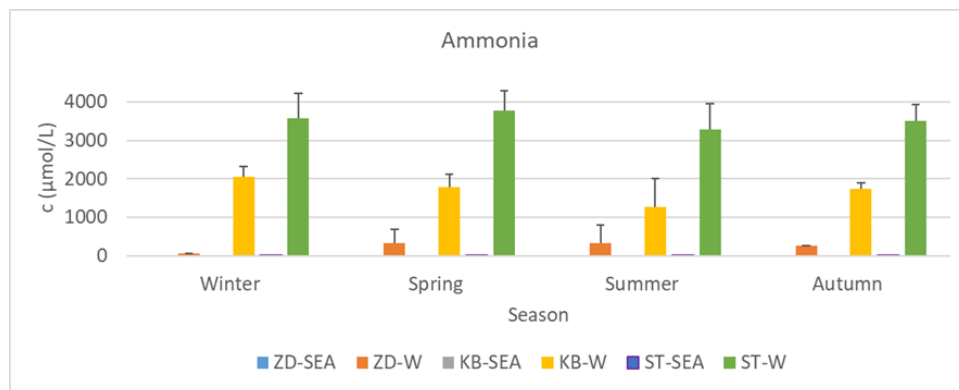


# SAMPLING

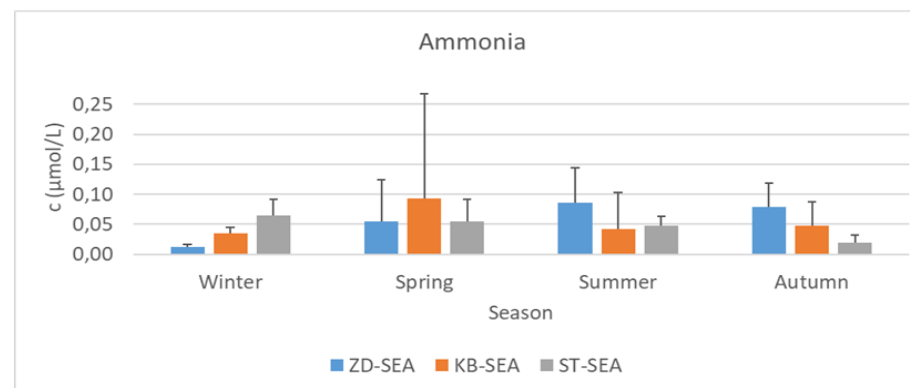
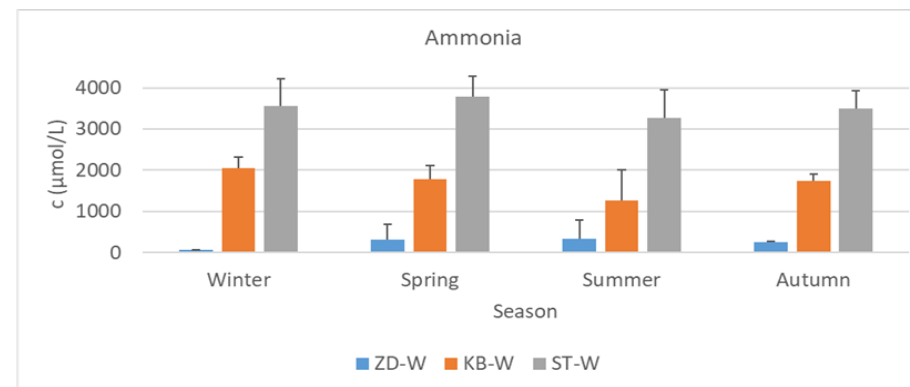


# RESULTS (1)

## Ammonia $\text{N-NH}_4$



Decrease by 3 orders of magnitude



## Waste waters WW

- **Range:** 0.12 to 67.12 mg/L (9-4794 µmol/L);
- **AV:** 23.8±20.0 mg/L (1700±1428 µmol/L)

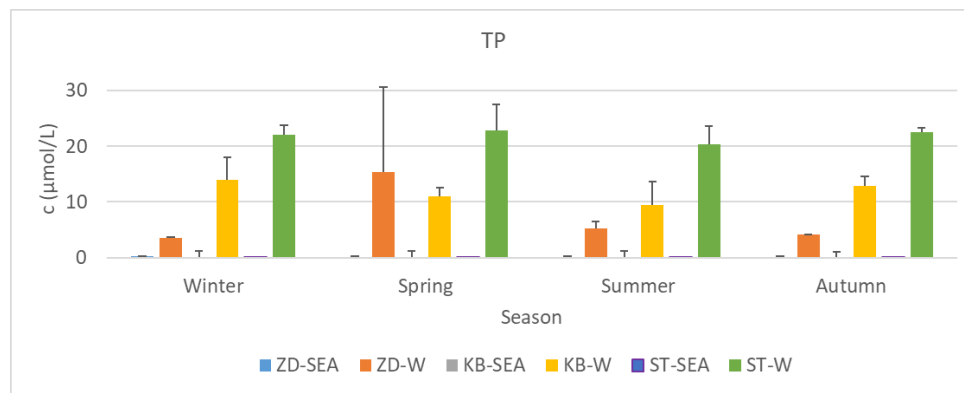
## Seawater SW

- **Range:** 0.01-0.57 µmol/L
- **AV:** 0.08±0.09 µmol/L

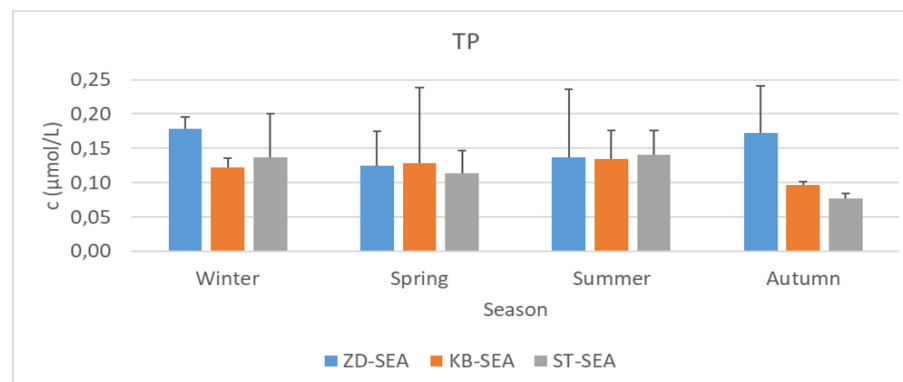
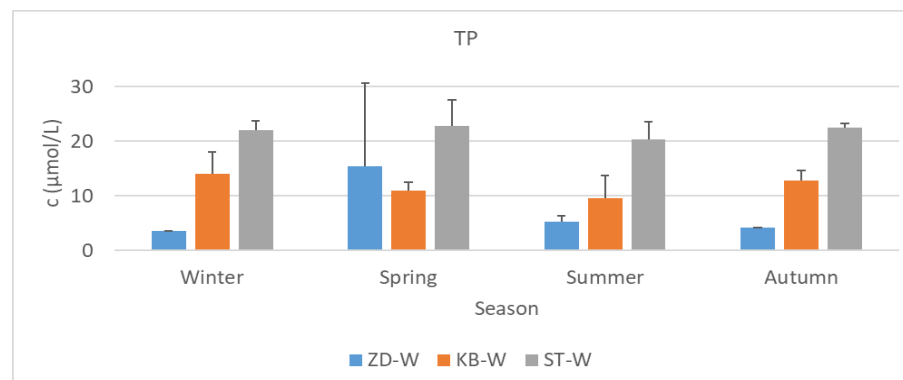


# RESULTS (2)

## TP



Decrease by 3 orders of magnitude



## Waste waters WW

- **Range:** 0.35 to 11.12 mg/L (11-358  $\mu\text{mol/L}$ )
- **AV:**  $4.14 \pm 2.75$  mg/L ( $133 \pm 89$   $\mu\text{mol/L}$ )

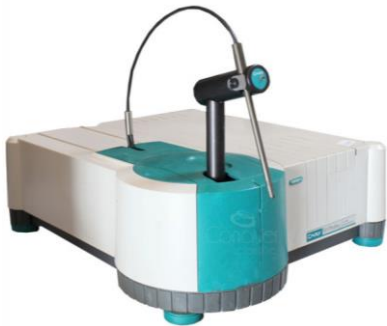
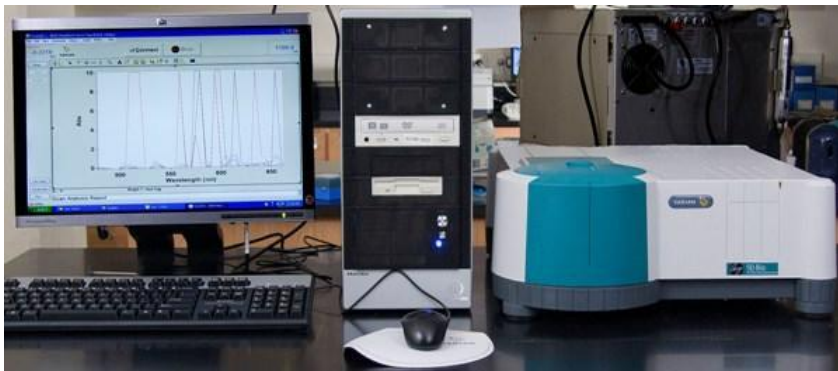
## Seawater SW

- **Range:** 0.04 to 0.38  $\mu\text{mol/L}$
- **AV:**  $0.15 \pm 0.07$   $\mu\text{mol/L}$

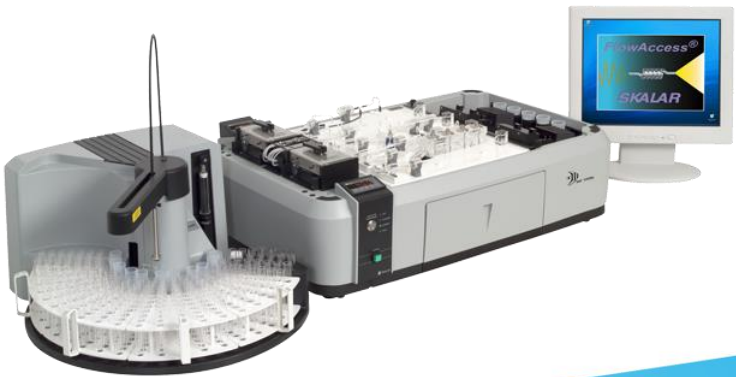


# WP 4.2.2. REPORT on the monitoring activities in Croatia, comparison of conventional methods and methods with new technology

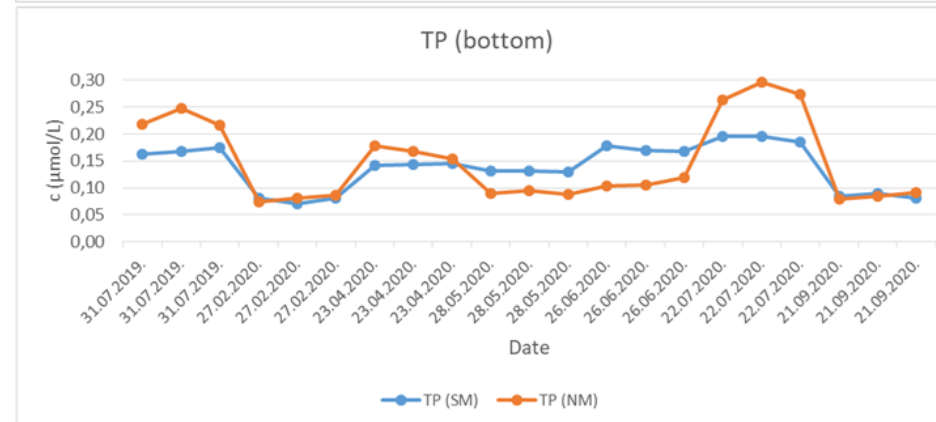
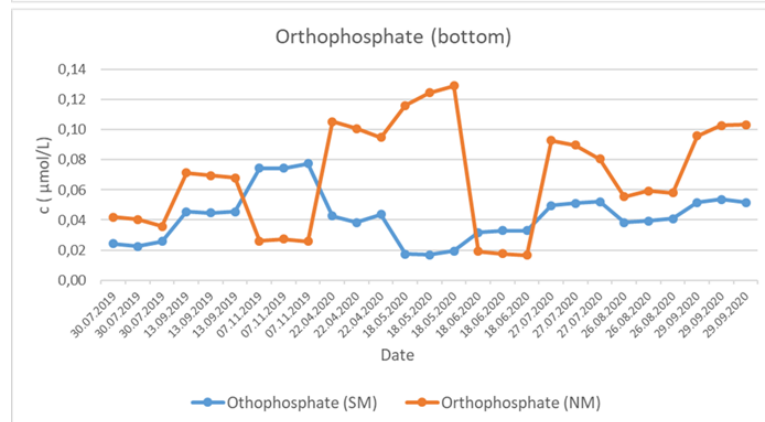
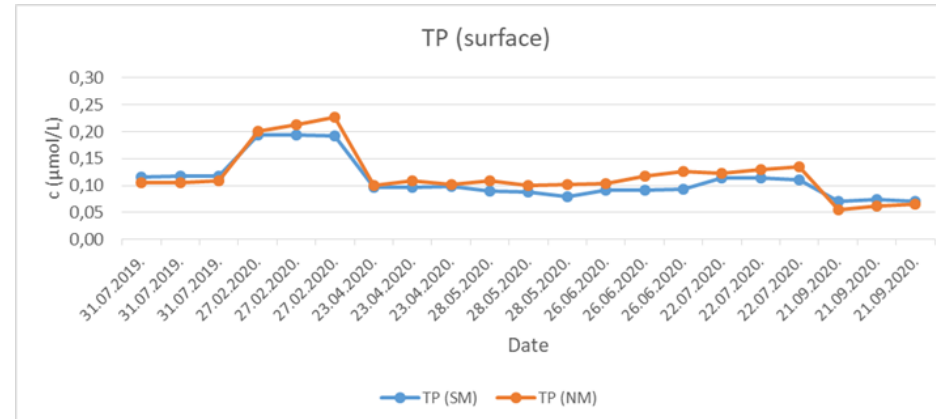
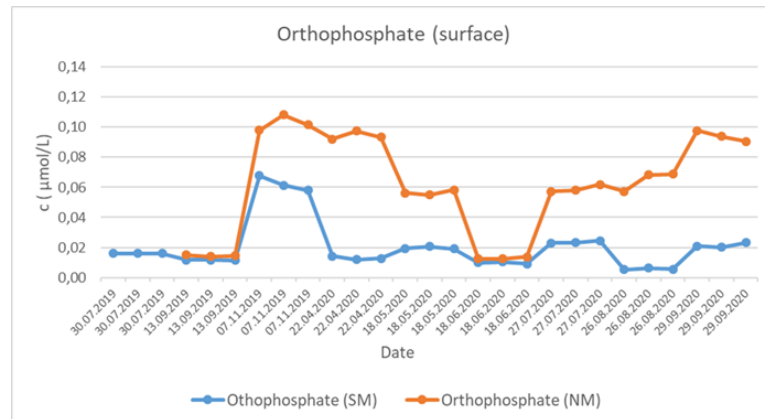
## PART II TRADITIONAL Spectrophotometric METHODS



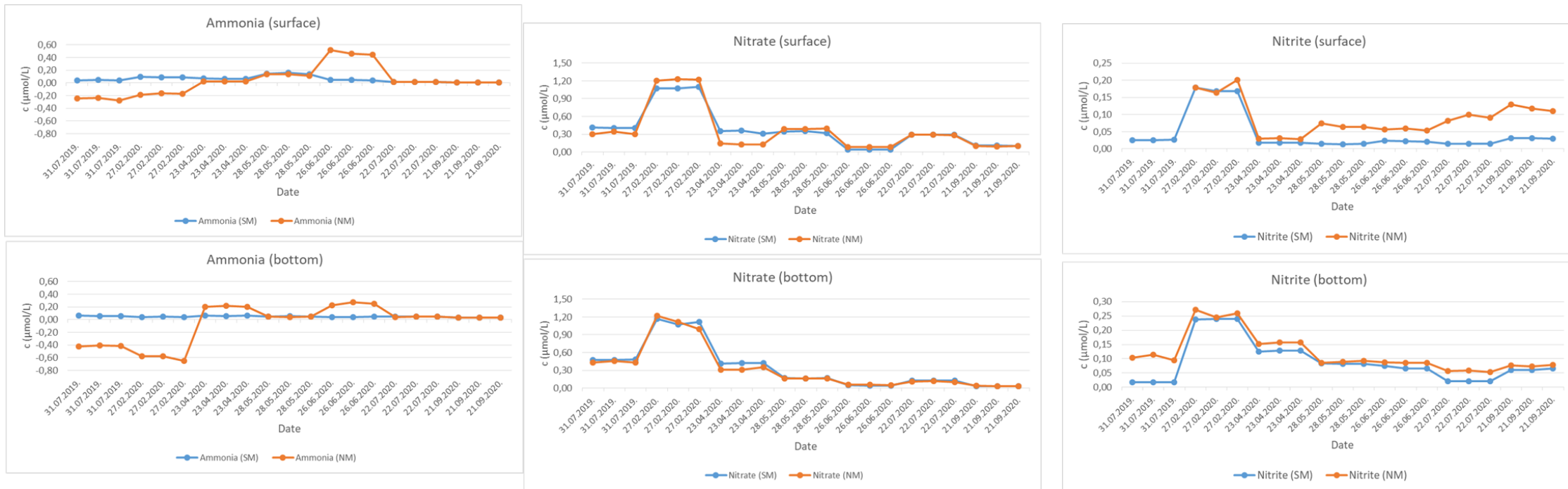
## VS AdSWiM INSTRUMENTATION Scalar CFA SAN++



# COMPARISON BETWEEN STANDARD AND NEW METHODS OF DETERMINATION (egz.)



# COMPARISON BETWEEN STANDARD AND NEW METHODS OF DETERMINATION (egz.)



Relatively good compliance of the concentrations obtained for **total phosphorus** and **silicates , nitrites, nitrates**.





## WP 5.3 joint and shared cross-borders strategies of WWTP management and legislative action proposal

### INTRPRETATION OF RESULTS IN RELATION TO EXISTING LEGISLATION



According to MSFD; (2017/848/EU), concentrations of **DIN, TP** and **orthophosphate** lower than the thresholds that divide the categories of **good and moderate ecological status**



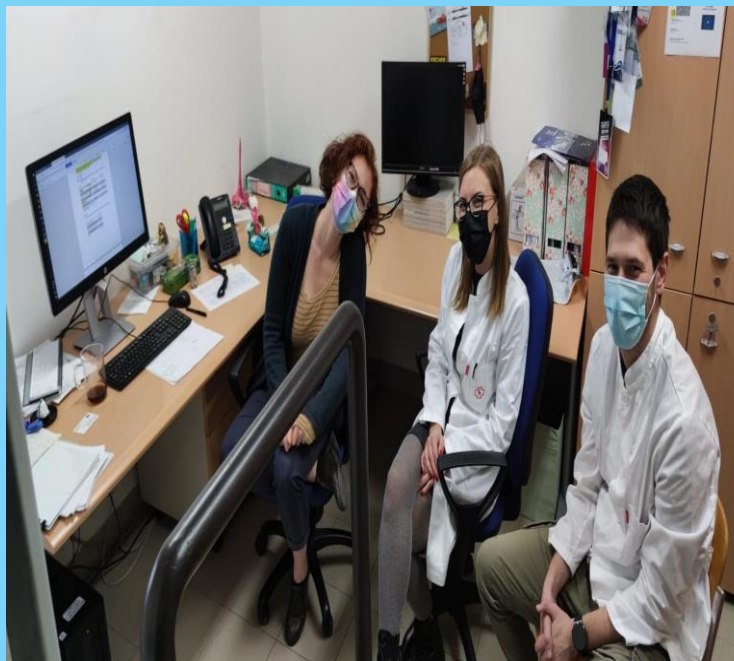
According to WFD (2000/60/EC, OG 96/2019), reported concentrations are under the category of a **very good ecological state**

# CONCLUSION

- 1 For the better monitoring of seawater in proximity to TPs, to implement EU Directives (2017/848/EU and 2000/60/EU) -----→Croatian legislative (OG 96/2019)
- 2 Introduce innovative wastewater treatment solutions for pathogens removal
- 3 Need to improve the level of wastewater treatment, upgrade for nutrients reduction

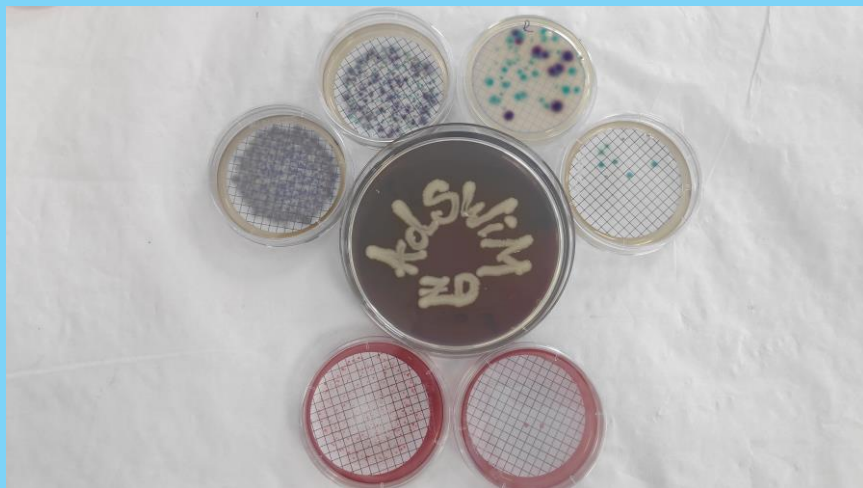


# Cross border knowledge exchange





# Thank you for your attention !



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