

# Development of bioconjugates of luminescent quantum dots with antibodies for immunofluorescence applications



**Borova M<sup>1.</sup>, Kapush O<sup>2.</sup>, Horiunova I<sup>1.</sup>, Plokhovska S<sup>1.</sup>, Pushkarova N<sup>1.</sup>, Yemets A<sup>1.</sup>**

<sup>1</sup>*Institute of Food Biotechnology and Genomics NAS of Ukraine, Osipovskogo Str 2a., Kyiv 04123, Ukraine, [marie0589@gmail.com](mailto:marie0589@gmail.com)*

<sup>2</sup>*V.E. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Pr. Nauki 45, Kyiv 02000*

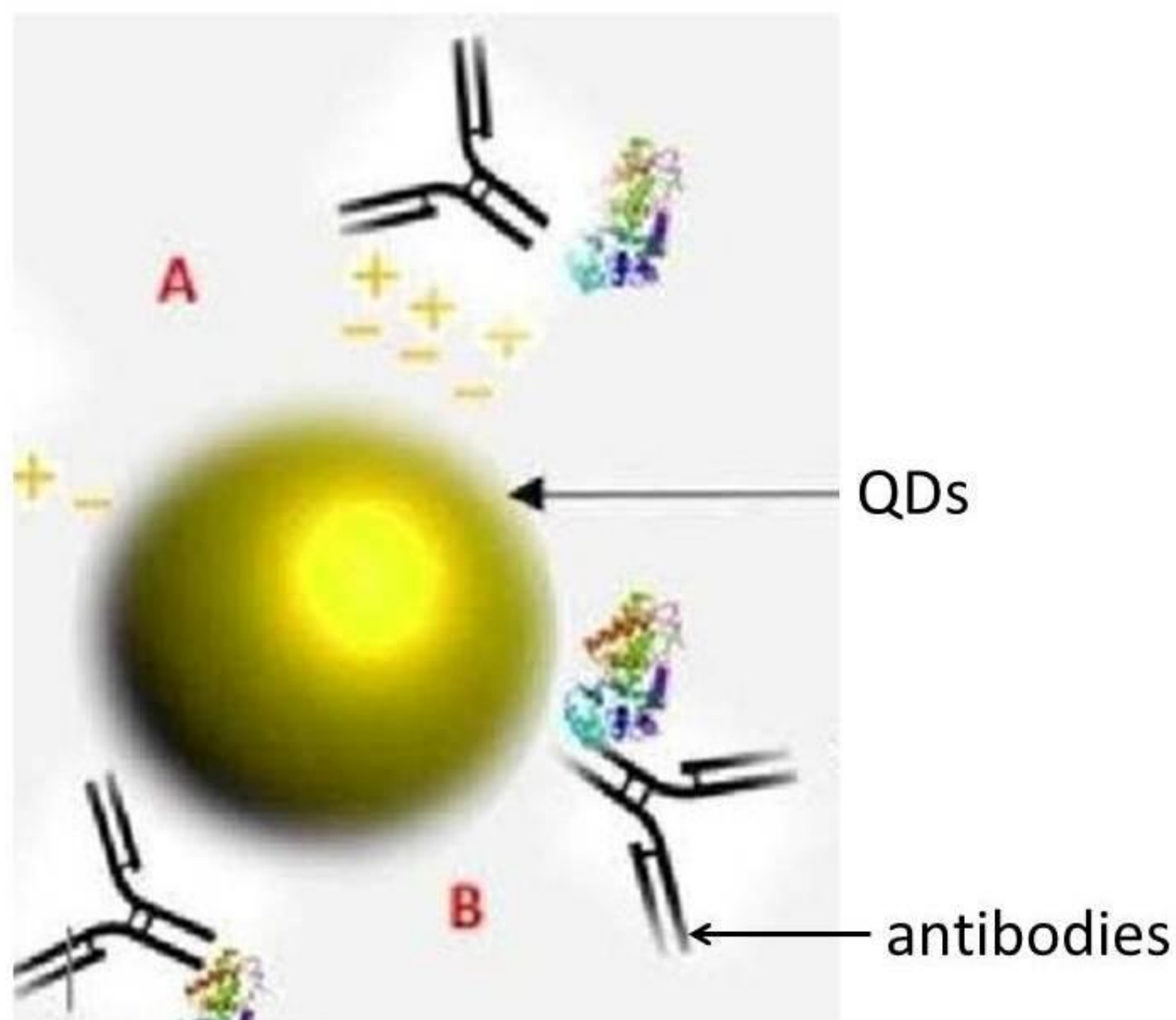
## INTRODUCTION

Photoluminescent semiconductor nanocrystals, that are spherical in shape (QDs), have attracted significant attention in biolabeling and bioimaging applications. One of common strategy is to use the specificity of antibodies for targeting. The purpose of the present work is to couple Ag<sub>2</sub>S nanocrystals with antibodies to the cytoskeletal protein tubulin, which will allow visualization of microtubules, that able to demonstrate the prospects of using quantum dots in immunofluorescence.

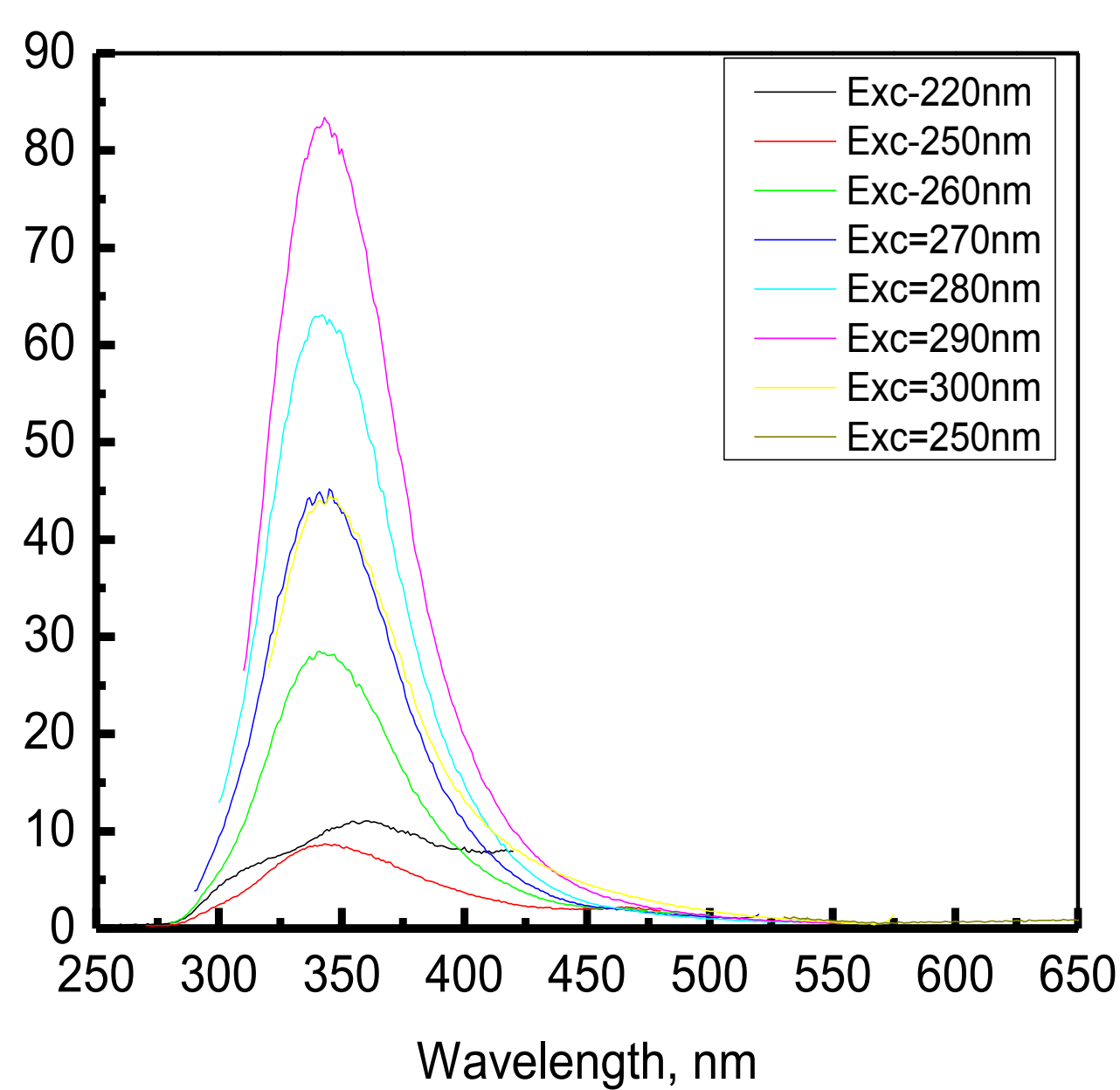
## METHODS

The critical reagents for the covalent coupling process are EDC and Sulfo-NHS they increase conjugation efficiency and create a more stable amine-reactive intermediate for binding with antibodies. Characterization of Ag<sub>2</sub>S nanoparticles was carried out using scanning electron microscope JEOL JEM-2100F. Bioconjugates were studied by laser scanning confocal microscope «LSM 510 Meta» (Germany)

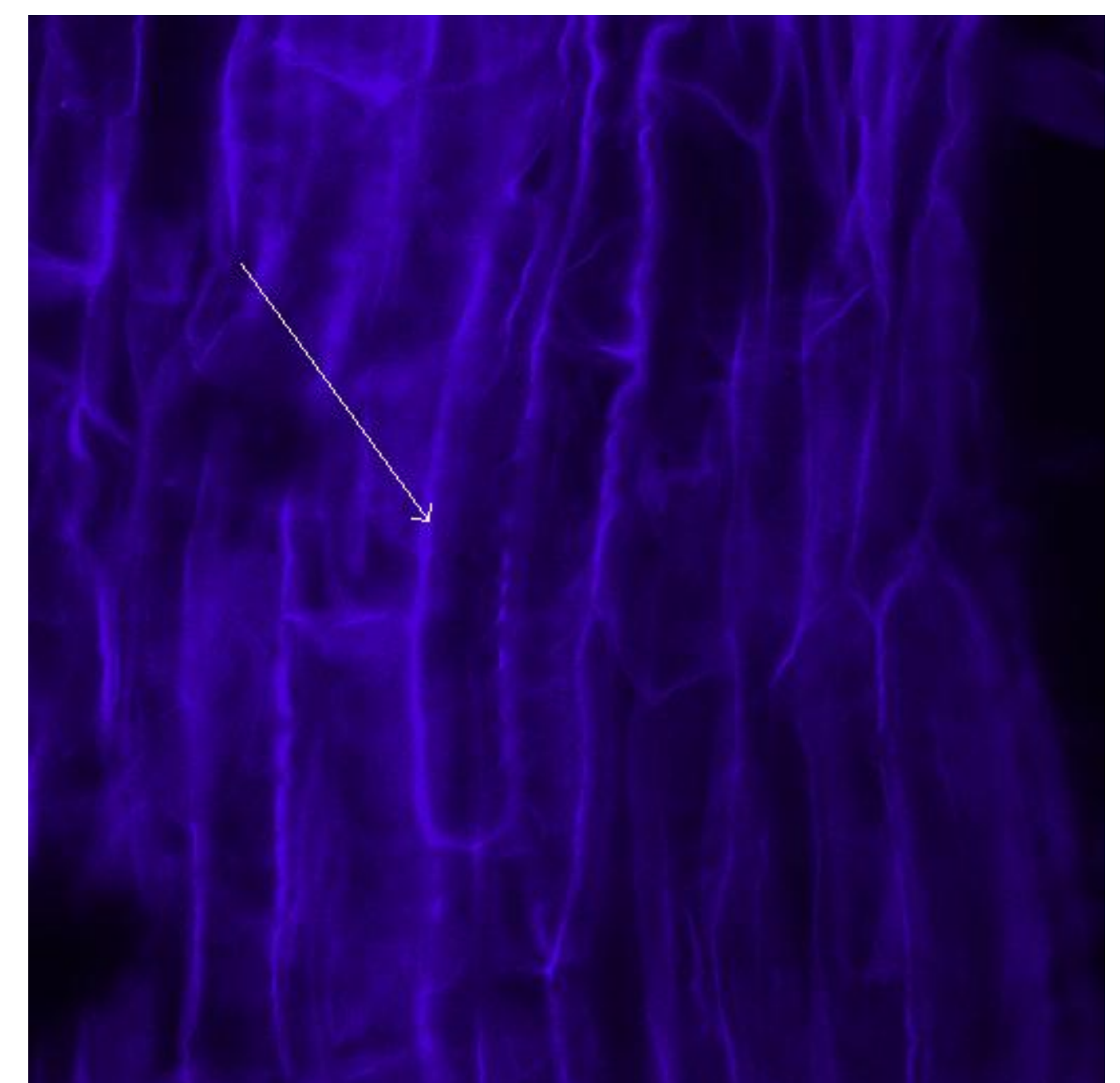
## RESULTS



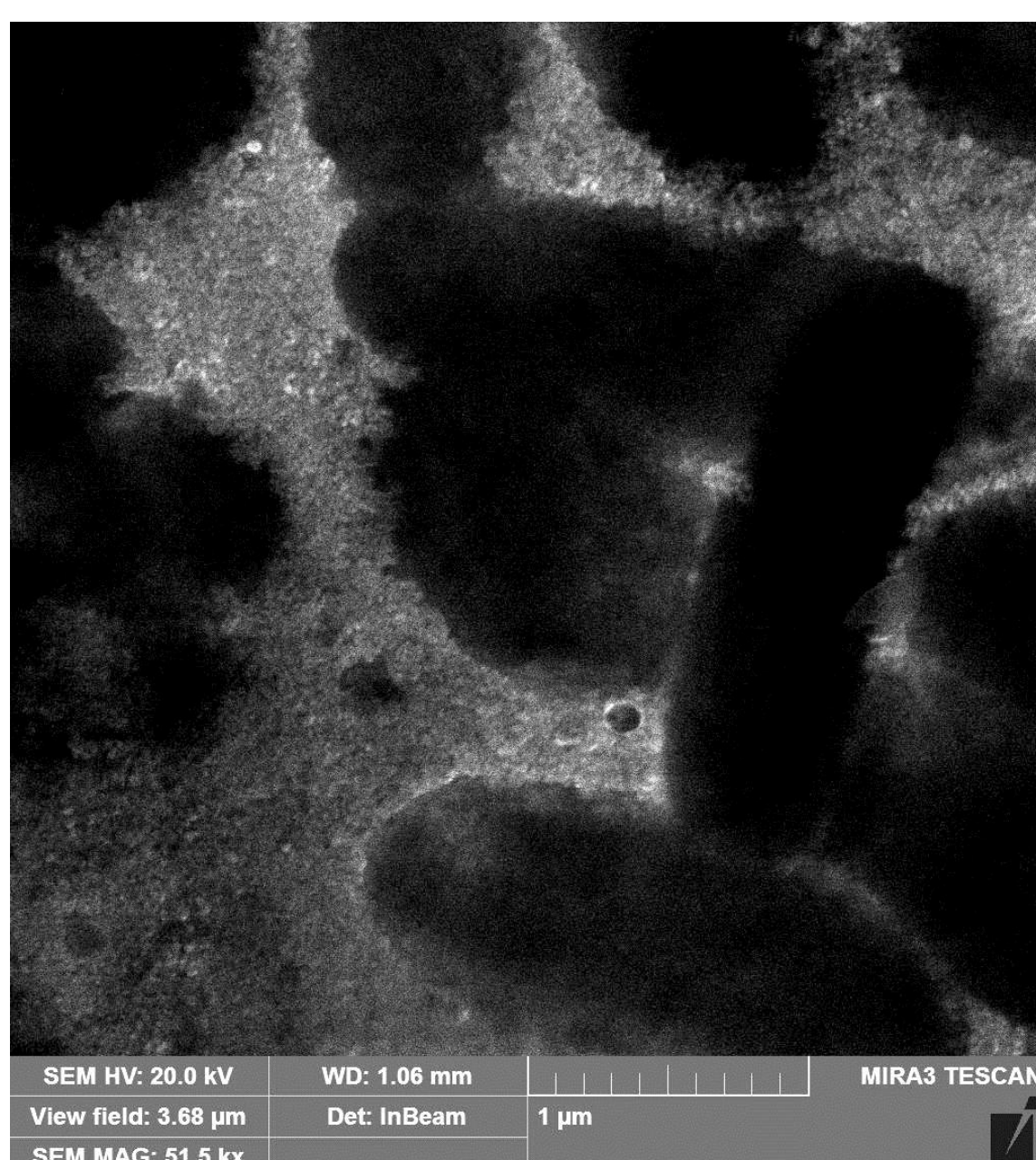
Schematic image of QDs conjugates with antibodies



symmetric luminescence spectrum of obtained conjugates with a maximum at 350 nm



Intracellular localization of Ag<sub>2</sub>S-antibody conjugates in *N. tabacum* root cells



SEM image of Ag<sub>2</sub>S-antibodies

## CONCLUSIONS

We have developed a procedure for creation antibody bioconjugates, characterized their physical properties and investigated microtubules in epidermal root cells of *Nicotiana tabacum* plants



Business Support on Your Doorstep