

GENERAL INFORMATION

1. NAME OF THE CENTER AND LOCATION

Sofia University St. Kliment Ohridski, Laboratory of Virology

2. TYPE OF THE RESEARCH INFRASTRUCTURE AND/OR SCIENTIFIC EXPERTISE

Identify the type of the RI, equipment/facilities/ specific research, and in particular linked to COVID-19:

Scientific equipment for virological research & development & testing of antiviral products and personal protection equipment.

KEY WORDS:

Expertise in virology, Testing of personal protection equipment, Antiviral testing

3. TYPE OF THE RESEARCH

Provide information on the research carried on or planned in regard with COVID-19 and other viruses

Low cost, efficient and capable of multiple use facemasks are a rare commodity these days. The coronavirus outbreak showed us that we should consider our personal protective equipment very carefully and to innovate in them. Our proposal is to use a waste product - apricot pyrene as a base for the production of activated carbon. It can be the main element in the filter of this type of face masks.

The use of activated carbon is nothing new in the field, but some preliminary research results show that when it is made from apricot pyrene its filtering capacity is very high. This gives us an opportunity to make a valuable product from some previous waste. More importantly – if we can make a reasonably thin and easy to breathe through filter that has the capability to filter a virus model with similar characteristics as SARS-CoV-2 this can become a tool for our fight against the virus and a valuable protection method especially for the first line of defense – our medical staff.

Preliminary studies on the activated carbon and its virus filtering capabilities were already started with promising results.

4. WEBSITE

Provide the internet address:

https://www.universityofsofia.bg/index.php/eng/the_university/faculties/faculty_of_biology2/structures/laboratories/laboratory_of_virology

5. BACKGROUND, PUBLICATIONS AND OPEN DATA REPOSITORY

leading research team AND Scientific publications of the research group on the topics of related to coronaviruses research results; link to open data repository	<p>Virology: Prof. Stoyan Shishkov, PhD; Assist. Prof. Kalina Shishkova, PhD Assist. Prof. Anton Hinkov, PhD; Assist. Prof. Daniel Todorov, PhD; Venelin Tsvetkov – PhD student</p> <p>Tsvetkov, V. et al., Effect of plasma activated medium and water on replication and extracellular virions of HSV-1, 2020, <i>Plasma medicine</i>, in press, 10.1615/PlasmaMed.2020033626</p> <p>Chayrov R., E. Stylos, M. Chatziathanasiadou, K. Chuchkov, A. Tencheva, A. Kostagianni, T. Milkova, A. Angelova, A. Galabov, S. Shishkov, D. Todorov, A. Tzakos, I. Stankova. 2018. Tailoring acyclovir prodrugs with enhanced antiviral activity: rational design, synthesis, human plasma stability and in vitro evaluation. <i>Amino Acids</i>. DOI: 10.1007/s00726-018-2590-y.</p> <p>Shishkova K., I. Tsekov, R. Popov, S. Shishkov, Z. Kalvathev. 2014. PCR Systems for Detection of Novel Elusive Human Pathogens Torque Teno Viruses (TTVs) in Bulgaria. <i>Compt. Rend. l'Acad. Bulg. Sci.</i>, 67 (8):1175-1186.</p>
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6. COORDINATOR

Sofia University St. Kliment Ohridski

Contact person;

Prof. Stoyan Shishkov, PhD

e-mail sshishkov@biofac-uni,sofia.bg

7. POSSIBLE PARTNERS

Indicate the partner organizations	<p><i>Full name of the partner</i></p> <p><i>Contact person; e-mail</i></p> <p>Bulgarian Academy of Science</p> <p>Prof. Pavlina Dolashka, PhD</p> <p><i>pda54@abv.bg</i></p>
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National Center of Infectious and Parasitic Diseases (NCIPD)

Prof. Neli Korsun, MD, DSc

e-mail neli_korsun@abv.bg

8. IMPLEMENTED AND RUNNING PROJECTS

Projects related to virology, vaccines, infection diseases ...

National scientific program Innovative low-toxic biologically active precision medicine products (BioActMed. *Ministry of Education and science*)

Effects and mechanisms of impact of electrical discharges in gases and liquids on model biological systems. *National science fund, Ministry of Education and science*