GENERAL INFORMATION

1. NAME OF THE CENTER AND LOCATION

Department of Virology,
The Stephan Angeloff Institute of Microbiology, Bulgarian Academy of Sciences
26, Academician Georgi Bonchev Str., BG-1113, Sofia, Bulgaria

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 biomedical and pharmaceutical research & development: laboratory units 2nd safety level, cell cultures techniques. Specific research: experimental chemotherapy of viral infections – search for inhibitors of viral replication towards viruses from various taxonomic groups (enteroviruses, rhino-, norovirus, toga-, flavi-, influenza, paramyuxo-, rhabdo-, adeno-, herpes- and poxviruses). Screening for antiviral effects of synthetic and natural substances in vitro in (cell cultures). Viral models selected from taxonomic groups in which containing viruses, causative agents of infectious diseases. Testing of substances versus human coronavirus 229E in vitro. Study of biological response modifiers (antioxidants, immunomodilators, interferon inducers) as antivirals. Testing of virucidal effects of disinfectants. Combination effects of antivirals in vitro and in vivo (experimental infections in laboratory animals). More than 250 publications on antivirals – 2/3 in international journals. 39 registered innovations and patents on antivirals. Active membership in the International Society for Antiviral Research. Hosting of the International Conference on Antiviral Research in 2011 in Sofia. KEY WORDS: Expertise in virology – antivirals and biological response modifiers; testing of products of chemical synthesis and naturalm products against viruses causative agents of infection diseases; animal testing; combination effects of viral inhibitors

3. TYPE OF THE RESEARCH

Provide information on the research carried on or planned in regard with COVID-19 and other viruses	Experimental chemotherapy of viral infections – search for inhibitors of viral replication towards viruses from various taxonomic groups (enteroviruses, rhino-, norovirus, toga-, flavi-, influenza, paramyuxo-, rhabdo-, adeno-, herpes- and poxviruses). Screening for antiral effects of synthetic and natural substances in vitro in (cell cultures). Viral models selected from taxonomic groups in which containing

	viruses, causative agents of infectious diseases. Testing of substances versus human coronavirus 229E in vitro. Study of biological response modifiers (antioxidants, immunomodilators, interferon inducers) as antivirals. Testing of virucidal effects of disinfectants. Combination effects of antivirals in vitro and in vivo (experimental infections in laboratory animals). A project is proposed for testing of 22 compounds (11 developed by the team in Dedpartment of Virology, Inst. Microbiology, Bulg. Acad. Sci. + 10 plant extracts) towards human coronavirus 229E in cell cultures. Referent antiviral: chloroquine.
4. WEBSITE	
Provide the internet address:	http://microbio.bas.bg/wordpress/index.php/en/
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**	Sciences from the Department of Virology of the Stephan Angeloff Institute of Microbiology More than 250 publications on antivirals – 2/3 in international journals. 39 registered innovations and patents on antivirals. Active membership in the International Society for Antiviral Research. Hosting of the International Conference on Antiviral Research in 2011 in Sofia. **In-vitro cytotoxicity laboratory:** Assoc Prof. Tanya Topouzova Hristova, PhD - topouzova@biofac.uni-sofia.bg Assist/ Prof. Georgi Nikolaev, PhD - gn_georgiev@uni-sofia.bg • Tsvetkov, V. et al., Effect of plasma activated medium and water on replication and extracellular virions of HSV-1, 2020, Plasma medicine, in press, 10.1615/PlasmaMed.2020033626. • 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. Amino Acids. DOI: 10.1007/s00726-018-2590-y. • Shishkova K., I. Tsekov, R. Popov, S. Shishkov, Z. Kalvatchev. 2014. PCR

Systems for Detection of Novel Elusive Human Pathogens Torque Teno Viruses (TTVs) in Bulgaria. Compt. Rend. l'Acad. Bulg. Sci., 67 (8):1175-1186.

- Zahmanov, G., K. Alipieva, P. Denev, D. Todorov, A. Hinkov, S. Shishkov, S. Simova, M.I. Georgiev. 2015. Flavonoid glycosides profiling in dwarf elder fruits (Sambucus ebulus L.) and evaluation of their antioxidant and anti-herpes simplex activities. Industrial Crops and Products, 63: 58–64.
- E. Haladjova, S. Halacheva, D. Momekova, V. Moskova-Doumanova, T. Topouzova-Hristova, K. Mladenova, J. Doumanov, M. Petrova, S. Rangelov. Polyplex Particles Based on Comb-Like Polyethylenimine/Poly(2-ethyl-2-oxazoline) Copolymers: Relating Biological Performance with Morphology and Structure. Macromol. Biosci. 2018, 1700349. https://doi.org/10.1002/mabi.201700349
- Radostina Kalinova, Jordan A. Doumanov, Kirilka Mladenova, Dushica Janevska, Milena Georgieva, George Miloshev, Tanya Topouzova-Hristova, and Ivaylo Dimitrov. Rational Design of Polypeptide-Based Block Copolymer for Nonviral Gene Delivery, Chemistry Select 2017, 2, 12006 – 12013; DOI: 10.1002/slct.201702403
- Haladjova, E., Kyulavska, M., Doumanov, J., Topouzova-Hristova, T., Petrov, P. Polymeric vehicles for transport and delivery of DNA via cationic micelle template method. Colloid Polym Sci (2017). https://doi.org/10.1007/s00396-017-4193-7
- Madalina G. Albu, Todorka G. Vladkova , Iliana A. Ivanova, Ahmed S. A. Shalaby, Veselina S. Moskova-Doumanova, Anna D. Staneva, Yanko B. Dimitriev, Anelya S. Kostadinova, Tanya I. Topouzova-Hristova. 2016. Preparation and Biological Activity of New Collagen Composites, Part I: Collagen/Zinc Titanate Nanocomposites. Applied Biochemistry and Biotechnology, 180(1):177-93; DOI 10.1007/s12010-016-2092-x
- Emi Radoslavova Haladjova, Silvia S Halacheva, Vilma Posheva, Ekaterina Peycheva, Veselina Moskova-Doumanova, Tanya Topouzova-Hristova, Jordan Doumanov, Stanislav Miletiev Rangelov. Comb-like Polyethyleneimine-based Polyplexes: Balancing Toxicity, Cell Internalization, and Transfection

Efficiency via Polymer Chain Topology. 2015. Langmuir 31 (36), pp 10017–10025 DOI:10.1021/acs.langmuir.5b02408

- Vukova TI, Dimitrov SD, Gagov HS, Dimitrova DZ. (2016) In focus: Fe3O4 nanoparticles and human mesenteric artery interaction in vitro. Nanomedicine (Lond). 11(8): 921-32. IF 4.93
- Mircheva, K., Petrova, S.D., Ivanova, T., Panaiotov, I., Balashev, K.T. Action of Vipoxin and its separated components on monomolecular film of dilauroylphosphatidylcholine at the air/water interface. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 562, 2019, 196-202.
- T.D. Andreeva, S.D. Petrova, K. Mladenova, V. Moskova-Doumanova, T. Topouzova-Hristova, N. Mladenov, K. Balashev, Z. Lalchev, J. Doumanov Effects of Ca2+, Glu and GABA on hBest1 and composite hBest1/POPC surface films. Colloids and Surfaces B: Biointerfaces, 161, 2018, 192-199.
- A. Chanachev, S. Simeonova, P. Georgiev, Tz. Ivanova, S. Petrova, K. Balashev. Characterization by atomic force microscopy of gold nanoparticles functionalized with azocasein for protease colorimetric enzyme assay. Bulgarian chemical communication 50, 2018, 223-227.

6. COORDINATOR

Full name of the coordinator organization;

The Stephan Angeloff Institute of Microbiology, Bulgarian Academy of Sciences, Sofia

Contact person;

Prof. Angel S. Galabov, MD, DSc, Academician (Regular Member) of the Bulgarian Academy of Sciences

e-mail: galabov@microbio.bas.bg

7. POSIBLE PARTNERS

Indicate the partner organizations

Institute of organic chemistry with centre of phytochemistry

Contact person;

Assoc. Prof. Georgi Dobrikov

e-mail: gmdob@orgchm.bas.bg

8. IMPLEMENTED AND RUNNING PROJECTS

Projects related to virology, vaccines, infection diseases …	We have not publications on testing against coronaviruses.