GENERAL INFORMATION

1. NAME OF THE CENTER AND LOCATION

Faculty of Biology, Sofia University "St. Kliment Ohridski"
8 Dragan Tsankov Blvd, 1164 Sofia
URL:https://www.uni-sofia.bg/index.php/bul/universitet_t/fakulteti/biologicheski_fakultet2
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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:

Available facilities and equipment positioned in the Faculty of Biology of the University include routine facilities for eukaryotic and prokaryotic cell culture and characterisation, animal histology and embryology units, laboratories for molecular biology and molecular genetics with ELISA methodology, RNA/DNA isolation, purification and quantification facilities, analytical tools, core facility for immune fluorescent microscopy incl. high resolution imaging platform for wide field microscopy with 3D deconvolution Delta Vision Ultra™, GE Healthcare, routine phase contrast, upright and inverted fluorescent microscopes cryopreservation facilities, routine and specific equipment for microbiology, virology and biotechnology. The Faculty possesses its own biobanks for cell-lines from eukaryotes and prokaryotes, Genetics unit with collection of model animals (Drosophila m.), animal facilities for laboratory species (at reconstruction under Co C of OP NOIR) and GMO accredited laboratories.

Expertise at the Faculty of Biology can contribute to the development of cell-based 2D and 3D culture assays for biological testing of drug substances and materials for pharmaceutical and biomedical applications by means of fluorescent and light microscopy, spectrophotometry and computer assisted analysis for qualitative and quantitative cytotoxicity testing; cellular stress response; cell proliferation and apoptosis; routine molecular biology, protein & genetic testing by Western & PCR techniques.

Following laboratories can provide expertise and execution of specific tasks:

- Laboratory for biophysics and model membranes
- Laboratory for cell electroporation with a cultivation block
- Laboratory for synthetic biology and RNA: RNA-based antibiotics (ribosomes)
- Biotechnological production of biologically active substances
- Laboratories for microbiological control and virology
- Laboratory for experimental animal and cell biology – development of models based on small animals and cell lines for toxicology testing and drug development

KEY WORDS:

Expertise in infection diseases - microbiological control, virology, in vitro cytotoxicity testing

3. TYPE OF THE RESEARCH	
Provide information on the research carried on or planned in regard with COVID-19 and other viruses	Expertise at the Faculty of Biology can contribute to the development of cell-based 2D and 3D culture assays for biological testing of drug substances and materials for pharmaceutical and biomedical applications: biological compatibility of different nanoparticles, designed for delivery of biological macromolecules such as DNA, RNA and proteins with potential use in biomedical studies; in vitro studying of bacteria-host cell interactions; biological activity of plant secondary metabolites with potential biomedical applications Related expertise and projects: 1. Testing of face masks and filters for their protection against infectious agents, including SARSCo-2. 2. Screening of substances synthetic and natural substances for anti-coronavirus activities in vitro 3. Biological properties of different nanoparticles, designed for delivery of biological macromolecules such as DNA, RNA and proteins with potential use in biomedical studies; 4. In vitro research on bacteria-host cell interactions, cell toxicity tests using lung adenocarcinoma cell line A549 5. Design of formulations for further RNAi-based therapy of CoVID-19. Objective is to design RNAi precursors and nanoparticles suitable for development of inhalation therapy for CoVID-19.
4. WEBSITE	
Provide the internet address:	*URL:* https://www.uni-sofia.bg/index.php/bul/universitet_t/fakulteti/biologicheski_fakultet2
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**	**Virology laboratory**: Prof. Stoyan Shishkov, Head, PhD - sshishkov@biofac.uni-sofia.bg Assist. Prof. Daniel Todorov, PhD - dani_todorov@abv.bg **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.

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6. COORDINATOR	
	Full name of the coordinator organization; Faculty of Biology, Sofia University *Contact person: Prof. Stoyqn Shishkov – Dean of Faculty of Biology,* *e-mail sshishkov@biofac.uni-sofia.bg* *Contact: Prof. Rossitza Konakchieva, Coordinator INFRAACT of NRRI 2017-2023* *E-mail: r.konakchieva@biofac.uni-sofia.bg*
7. POSIBLE PARTNERS	
Indicate the partner organizations	*Institute of Organic Chemistry with Centre of Phytochemistry (IOCCP),* *Bulgarian Academy of Sciense* *Prof. Pavlina Dolashka, PhD* *E-mail: pda54@abv.bg*
	ReproBioMed Medical Center, *Sofia 1618, Ovcha kupel,* *28, Boicho Ognianov street* *URL: www.reprobiomed.eu* *TTO in molecular genetics, virology testing, RNA extraction, Real-time PCR, NGS - Associate partner in the Research Infrastructure Cell Technologies in Biomedicine (INFRAACT)of the National Roadmap for RI 2017-2023* *URL:* http://www.alliancecelltechnologies.eu/en/organizations
	Joint Genomic Center Ltd *8 Dragan Tsankov Blvd, 1164 Sofia* *URL*: http://www.alliancecelltechnologies.eu/en/organizations/joint-genomic-center *Associate partner in the Research Infrastructure Cell Technologies in Biomedicine (INFRAACT)of the National Roadmap for RI 2017-2023* Contact: Academician Atanas Atanassov: atanas_atanassov@jgc-bg.org Assoc. Prof. Ivelin Pantchev: ipanchev@abv.bg
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8. IMPLEMENTED AND RUNNING PROJECTS

Projects related to virology, vaccines, infection diseases …	**National scientific program**: Innovative low-toxic biologically active precision medicine products (BioActMed), *2018, Partner. Funded by Ministry of Education and Science* **Centre of Competence BG05M2OP001-1.002-0012-C0**1 Centre of Competences: Sustainable utilization of bio-resources and waste from healing and aromatic plants for innovative bioactive products 2018-2023; Strengthening research and innovation and enhancing education the field of innovative bioactive products. The establishment and operation of planned new facility for experimental cell and molecular biology will create new possibilities for employment of multi-parametric analytic approaches, new generation improvement of the workflow and enhance competitiveness of obtained experimental results. *2018, Partner, Operational Program Science and Education for Smart Growth 2014-2020 co-funded by ESF and ERDF* **Research Infrastructure Cell Technologies in Biomedicine (INFRAACT**) of the National Roadmap for Research Infrastructure 2017-2023 funded by the Ministry of Education and Science (http://out.easycounter.com/external/horizon2020.mon.bg). Maim aim is to create technological platforms to serve pre-clinical cell and animal based scientific research by means of multi-omics-technologies; -cell biotechnologies; -in-vivo imaging; -cryobanking; -IT services and Bioinformatics **Design of new supra-molecular nanoparticles**: spherical nucleic acids with polymeric and liposomal cores, 2017, *Partner, Funded by NSFB, Ministry of Education and Science* Effects and mechanisms of impact of electrical discharges in gases and liquids on **model biological systems**, 2017, Partner, *Funded by NSF, Ministry of Education and Science*